

**REMEDIAL INVESTIGATION WORK PLAN
FOR DEVELOPMENT OF AN
INTERIM REMEDIAL ACTION
AT THE**

**HARRISON GAS PLANT SITE
HARRISON, NEW JERSEY**

Submitted by:
**Public Service Electric and Gas Company
80 Park Plaza
Newark, New Jersey**

Prepared by:
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110 Free Street
Portland, Maine**

February 1995

19.25
2.40

850000002

Certification
Pursuant to N.J.A.C. 7:26C-1.2(c):

Regarding the Remedial Investigation Work Plan for Development of an Interim Remedial Action at the Harrison Gas Plant site in Harrison, New Jersey.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in the Remedial Investigation Work Plan for the Development of an Interim Remedial Action dated February 1995, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

ABB ENVIRONMENTAL SERVICES, INC.

Daniel P. Ostrye

Program Manager

Typed/Printed Name

Title

Daniel P. Ostrye

2/10/95

Signature

Date

Sworn to and subscribed before me on this 10 day of February 1995;

Ellen M. Frost

Signature of
Notary Public - Maine

(Stamp and Seal/Commission Expiration Date)

October 6, 2000

850000003

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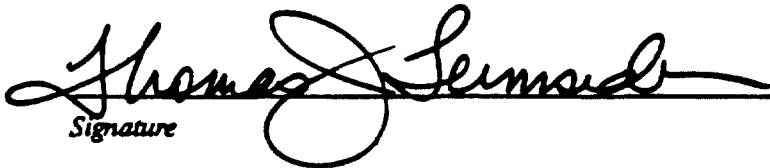
PUBLIC SERVICE ELECTRIC & GAS COMPANY

Thomas J. Leimsider

Project Manager - Environmental

Typed/Printed Name

Title


Signature

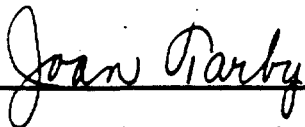
2/13/95
Date

Sworn to and subscribed before me on this 13th day of February 1995;

JOAN TARBY

Notary Public of New Jersey

My Commission Expires March 22, 1998


Signature of

Notary Public - New Jersey

(Stamp and Seal/Commission Expiration Date)

850000004

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PUBLIC SERVICE ELECTRIC & GAS COMPANY

Rudolph D. Stys

Senior Vice President - Gas

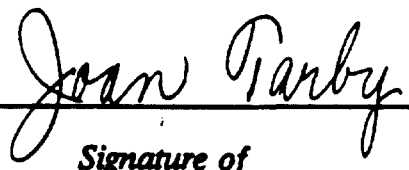
Typed/Printed Name

Title

Signature 

Date 1/13/95

Sworn to and subscribed before me on this 13th day of February 1995;


Signature of
Notary Public - New Jersey

JOAN TARBY
Notary Public of New Jersey
My Commission Expires March 22, 1998

(Stamp and Seal/Commission Expiration Date)

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**FORMER HARRISON GAS WORKS SITE
HARRISON, NEW JERSEY**

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1.0 INTRODUCTION

This Work Plan (hereinafter "WP") describes a series of tasks which will be performed to enable Public Service Electric and Gas Company (hereinafter "PSE&G") to identify and implement certain interim remedial actions (hereinafter "IRA") at the former Harrison Gas Plant Site (hereinafter "Site") to eliminate hydraulic communication between the Site and the Passaic River and to control groundwater and surface water flow at the Site. This WP will involve a focused remedial investigation (hereinafter "FRI"). The FRI will include those field work activities appropriate for the collection of the data necessary to: (i) identify and evaluate available interim remedial actions; (ii) select interim remedial actions suitable for the IRA Program; and (iii) develop detailed engineering designs for the interim remedial actions comprising the IRA Program.

1.1 BACKGROUND

PSE&G reported an alleged release of an oily substance from the Site to the Passaic River to the New Jersey Department of Environmental Protection (hereinafter

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"NJDEP") and the United States Coast Guard (hereinafter "USCG") on 23 May 1994. PSE&G implemented temporary mitigative measures to contain and collect the alleged release. By letter dated 30 May 1994, the USCG directed PSE&G, among other things, to investigate and, if warranted, implement remedial measures to prevent the release of oily materials from the Site to the river. NJDEP regulations require that PSE&G implement appropriate and necessary remedial corrective actions. PSE&G entered into a Memorandum of Agreement (hereinafter "MOA") dated 7 July 1994 with the NJDEP to resolve USCG and NJDEP requirements. The MOA requires PSE&G to investigate and, if necessary, remediate environmental problems at and emanating from the Site. This WP describes an initial stage of investigation focused on gathering the data and information necessary to develop engineering controls which will prevent the future migration of Manufactured Gas Plant (hereinafter "MGP") related compounds from the Site into the Passaic River. Data and information concerning environmental conditions at the Site will be gathered in connection with subsequent remedial investigation field work activities which may be required to properly fully characterize the Site.

The WP has been prepared pursuant to and in accordance with the NJDEP's Technical Requirements for Site Remediation [N.J.A.C. 7:26e-1 et seq.], NJDEP's Field Sampling Procedures Manual (May 1992), and other pertinent NJDEP

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guidelines. A Quality Assurance Project Plan (hereinafter "QAPP") and the Health and Safety Plan (hereinafter "HASP") will be prepared by the contractor selected to execute the WP.

1.2 PRESENT SITE DESCRIPTION

The Site is located at 2000 Frank E. Rodgers Boulevard (formerly Fourth Street) in the Township of Harrison, Hudson County, New Jersey (Figure 1). The Site presently consists of a single parcel of land which is generally triangular in shape and bounded on the northeast by Frank E. Rodgers Boulevard, on the south by the Passaic River and on the northwest by the Conrail railroad right-of-way (Figure 2). The Site encompasses approximately 29 acres. The Site is situated on the Passaic River. The southwestern boundary consists of approximately 1600 feet of shoreline; the eastern two-thirds of which has been reinforced through the construction of wood and concrete bulkhead structures. Drawings of the bulkhead construction have been retrieved from PSE&G's archives and can be used to help evaluate the structural integrity of the bulkheads. Remnants of pilings are visible along the remaining one-third of the shoreline, however, no historic records detailing the structures in this area have been located to date.

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Structures currently on the Site include certain plant and equipment associated with the former gas manufacturing operation as well as plant and equipment associated with an on-going natural gas metering and regulating station. PSE&G is in the process of dismantling several aboveground structures at the Site. The Site is presently a major PSE&G natural gas regulating and distribution facility. Transcontinental Gas Pipeline Corporation (hereinafter "Transco") and Texas Eastern Corporation (hereinafter "TETCO") operate major metering and regulating stations on lands immediately east of the Site. PSE&G operates a major liquified petroleum air (hereinafter "LPA") peak shaving facility on lands east of Transco's and TETCO's metering and regulating stations. Natural gas supplies and, on peak days, LPA are received and processed at the Site and distributed through gas main facilities on-Site to PSE&G's off-site gas distribution system. The Site contains equipment and the facilities to receive, process and distribute natural gas supplies to serve the Newark and Harrison areas (see Figure 2).

Two active 30-inch diameter gas mains serving Newark currently run beneath both the Site and the Passaic River. The river crossing is set in a concrete tunnel which runs beneath the river at a depth of approximately 35 feet below ground surface (hereinafter "bgs") near the junction of the timber and concrete bulkheads.

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Additionally, a 60-inch diameter storm sewer traverses the eastern boundary of the Site along Frank E. Rogers Boulevard and discharges into the Passaic River at the southeastern corner of the property. The Site is also serviced by a sanitary sewer that connects an on-Site pre-treatment facility to the municipal sewer and Publicly Owned Treatment Works (hereinafter "POTW"). (See Figure 2).

1.3 HISTORICAL SITE USE

PSE&G initially utilized the Site from 1905 to 1926 as an oil and gas storage area for its former Market Street Gas Plant (now abandoned) located directly across the Passaic River in Newark. In 1926 PSE&G installed a gas manufacturing facility on the Site which utilized the carbureted water gas (hereinafter "CWG") process with coke and bunker oil for Btu enrichment. During the period 1926 to 1954 the only change in facility operation was the addition of LPA production equipment in the late forties and the use of natural gas instead of reformed bunker oil for Btu enrichment in 1950. From 1954 to 1963 additional gas manufacturing capability utilizing the cyclic catalytic reforming (hereinafter "CCR") process, with natural gas or kerosene as the feedstock, was installed. Between 1963 and 1965 six of the CWG sets were converted to a high Btu oil gas process with kerosene as the feedstock for

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peak shaving purposes. Since 1965 the Harrison Plant has been primarily a metering and distribution point for pipeline natural gas, with the high Btu oil gas sets and LPA on peak shaving service, producing gas for distribution in the pipeline system during the coldest days of the year. During the spring of 1973, a small 20-million cubic foot per day (hereinafter "MMCFD") synthetic natural gas (hereinafter "SNG") facility utilizing naphtha as a feedstock, was put into operation to supplement the supplies of gas for distribution. Use of this facility was discontinued in 1980. The Site is also headquarters for PSE&G's Gas Business Unit Systems Engineering and Technical Support Staff.

The Site was developed over an area which included meadow mat and tidal channels which were subsequently filled prior to construction of the major production facilities. Fill materials may have included soil, slag, cinders and demolition materials.

Figure 3 depicts Site conditions circa 1924 relative to current site conditions including the relative orientation of the tidal channels to the existing structures.

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1.4 SITE GEOLOGY

The Site is situated on a bend in the Passaic River, in northeastern New Jersey and lies within the Newark Basin. Bedrock underlying the Site consists of Triassic Age sedimentary rocks. Bedrock mapped beneath the Site is encountered approximately 200 to 300 feet bgs and is described as being red shale and argillite. Pleistocene deposits, including glacial till, overlie the bedrock.

Prior to development, the Site geology likely consisted of a peat and organic silt derived meadow mat, incised by intertidal channels, overlying stratified deposits of alluvium (sand, silts and clays) that are underlain by glacially derived soils (stratified drift and till). Logs from soil borings drilled during the construction of the holders confirm the presence of miscellaneous fill overlying the organic silt and peat which is underlain by units of brown, gray, and reddish fine to coarse sand, silty sand, clay and gravel. A silty clay layer, of various thickness was apparently encountered at approximately 50 feet bgs.

Factors that have likely influenced the surficial 10 to 15 feet of the Site include:

- presence, character, and method of placement of fill materials,

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- tidal influences caused by the Passaic River,
- periodic flooding of the Site, and
- presence and character of subsurface structures (e.g., foundations, drainage, utilities).

The geologic data relating to the Site conditions is based on a review of relevant regional literature and available archival records relating to subsurface conditions at the Site.

1.5 SITE HYDROGEOLOGY

Groundwater is found within both the unconsolidated overburden soils and within the underlying bedrock. The primary source of groundwater in this portion of Hudson County is within the Brunswick Formation which includes the bedrock underlying the Site. The bedrock aquifer within the Brunswick Formation consists of shale, argillite and sandstone deposits, and water is contained principally in fractures, joints, and bedding planes within the formation.

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The finer grained soil layers such as the alluvial clays are expected to be of low permeability and are not considered to be used as a primary source of water. These low permeability deposits, if present beneath the Site, would retard downward movement of groundwater. Limited information regarding the overburden soils beneath the Site has been retrieved, however, sufficient information to allow characterization of the Site hydrogeology is not available.

Because the Site is located on a bend in the Passaic, it behaves hydrogeologically as a peninsula. Within the Site area, the direction of shallow groundwater (i.e., within the fill materials) movement is expected to be radial, toward the Passaic River. The proximity to the river is likely to influence shallow groundwater, especially in the more permeable former intertidal channels that likely were backfilled with permeable fill materials. At low tide, shallow groundwater discharges into the river, possibly reversing directions at high tide. The Site is approximately level and ground surface generally lies less than 15 feet above the level of the river. The depth to groundwater is anticipated to be less than 15 feet bgs.

The deep groundwater system is expected to be aligned with regional flow, to the east.

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1.6 PRELIMINARY ENGINEERING FEASIBILITY REVIEW

An objective of this Work Plan is to develop the information needed to select and design an interim remedial action which will eliminate hydraulic communication between the Site and the Passaic River. An IRA will also be designed to eliminate tidal influence on groundwater. Dredging of the Passaic River channel could occur in the future and, accordingly, the engineering design of the IRA will also need to consider structural performance that will withstand the removal of up to 18 feet of sediment from the bottom of the river immediately adjacent to the Site. The IRA Program will include the development of an engineering design for the control of the hydrogeology of the entire Site.

Preliminary engineering reviews indicate that a sheet-pile cut-off wall may present the most promising means for isolating the Site from the river. Other alternatives considered in this preliminary engineering review included slurry cut-off walls, shore line covers, and hydraulic containment.

The slurry cut-off wall was placed at a lower priority because of the presence of the wooden deck. This wall would need to be constructed in a trench excavated into a relatively impermeable layer, which may be at a depth of 50 feet. The trench would

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be backfilled with a clay-soil mixture to form a low permeability wall. The presence of the deck would keep this trench at least 30 feet inland along a major portion of the shoreline preventing isolation of a portion of the Site. An additional potential difficulty would be the presence of subsurface obstacles such as timber piles and foundations.

A shoreline cover was placed at a lower priority essentially for the same reasons. A shoreline cover would typically consist of some combination of low permeability liner, soil or rip rap. A major portion of the shoreline is occupied by the bulkhead underlain by the wooden deck and timber piling where a shoreline cover could not be placed.

The hydraulic containment alternative was placed at a lower priority as being economically impracticable. Hydraulic containment would consist of groundwater pumping along the shoreline to continuously reverse the flow of groundwater from the river to the Site. Apparently, this reversal currently occurs during high-tide. Given the length of the shoreline and the presence of the filled intertidal channels, a substantial quantity of water would have to be continuously pumped and treated to accomplish this reversal of flow. This situation would be particularly demanding at high-tide.

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A sheet-pile cut-off wall was retained as the highest priority alternative. This wall would consist of interlocking sheet piling driven just outside of the bulkhead and the high-tide shoreline. Its depth would be sufficient for its structural stability and, if practicable, to imbed it in a low permeability layer thereby hydraulically isolating the Site from the river. The interlocking joints would be a type that could be grouted to reduce leakage at the joints.

The proposed IRA will include a method of tying in at both ends of the property. It would also be fitted around the existing 60-inch storm sewer outfall in the vicinity of the Jackson Street Bridge pier. Near the center of the bulkhead, the sheet piling would need to be fitted around an underground gas line. At the west end of the Site, the piling would be brought around the property corner and up the west boundary some distance to provide isolation at this corner. A design for a groundwater collection/extraction system on the Site side of the piling would be necessary to maintain a steady-state water balance at the Site.

Currently, one primary source of recharge of groundwater at the Site appears to be infiltration of surface precipitation. The Site lies on a bend in the Passiac River which essentially makes it a peninsula with respect to the hydrologic cycle of water movement. Precipitation on this peninsula that does not runoff as surface water,

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percolates into the ground and probably creates a mound of groundwater near the longitudinal centerline of the peninsula. Groundwater then seeps outward from this mound toward discharge points along the Passaic River. As a consequence, management of stormwater may be a key element in achieving hydraulic containment at the Site.

Installation of a cut-off wall has the potential to create a subsurface dam in the surficial groundwater system (fill materials) restricting and altering its movement along this wall. If the flow of groundwater were perpendicular to this wall, which is likely the case in the shallow system, then groundwater would build up behind the wall until this localized mound caused a new steady-state movement to the Passaic River. Depending how much Site groundwater changed direction as a result of the cut-off wall, the goal of Site isolation might not be completely attained with just a cut-off wall. Hydraulic control behind the cut-off wall could include a collector trench behind the wall, a series of trench drains, and/or asphalt surface paving to prevent rainfall percolation.

If collected groundwater required treatment, the existing wastewater treatment system at the Site may be used to some extent. The wastewater treatment plant is permitted to discharge treated effluent to the Passaic Valley Sewerage

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Commissioners Treatment Works under a sewer connection permit (No. 13403712).

A copy of the sewer connection permit is included as Appendix A to this Work Plan.

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2.0 TECHNICAL APPROACH

The WP has been developed to describe the tasks which will be performed to identify and develop the detailed engineering design for the engineering controls, described in Section 1.6. These controls will eliminate communication between the Site and the Passaic River. The technical approach involves gathering relevant Site information, analysis of the information as regards to evaluating available engineering controls, and the selection and the development of a recommended detailed design for the engineering controls.

Site related factors that will have a significant effect on the assessment, selection and development of designs of engineering controls for the IRA program will include:

- chronological development of the Site;
- details of foundations for the existing bulkheads;
- details on Site underground utilities;
- characterization of the subsurface soils and their engineering properties (including Passaic River sediments adjacent to the existing bulkhead);
- permeability of subsurface materials;

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- tidal fluctuations in the Passaic River;
- presence of a potential confining layer;
- annual rainfall and surface water/stormwater run-off;
- presence of contaminants; and
- planned future use of the Site.

The WP identifies and describes the following four (4) tasks that will be performed to develop an IRA Program for the Site.

Task 1 - Compilation of Site Development Information

Task 2 - Implementation of a Field Sampling and Analysis Program

Task 3 - Engineering Assessment and Cost Estimate of Available IRAs

Task 4 - Detailed Designs and Cost Estimates for IRA Program

A report will be prepared subsequent to the completion of Task 4. The report will present the data and information relied upon as a basis for the selection of the IRA Program.

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2.1 TASK 1 - COMPILATION OF SITE DEVELOPMENT INFORMATION

The purpose of this task is to conduct a review of available information to establish an understanding of:

1. Site Development, as it may relate to behavior of groundwater;
2. Existing river front structures, as it may relate to engineering connections/tie-ins/interferences with the IRA Program; and
3. Future Site use, as it may relate to the IRA Program (e.g., docking facility [if desired]) other than elimination of a hydraulic connection between the Site and the Passaic River.

The following sources of information shall be reviewed to develop the above understandings:

- Sanborn Maps;
- Photographs (aerial and Site specific);

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- Relevant archival data pertaining to the Site;
- Town of Harrison records pertaining to water, sewer, stormwater and roadway development and improvements;
- NJDEP files pertaining to the Site and data concerning sediment and water quality in the Passaic River; and
- U.S. Army Corps of Engineers records pertaining to dredging and channel maintenance.

2.2 TASK 2 - FIELD SAMPLING AND ANALYSIS

The purpose of this task will be to determine the general stratigraphy and physical characteristics of the subsurface soils above a confining layer which has been encountered at depths of 30 to 60 feet bgs. The investigation will focus on obtaining data needed to determine the engineering properties of the subsurface soils above the confining layer and to assess groundwater movement and potential presence of MGP residuals within the soil strata.

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A field sampling and analysis plan was prepared pursuant to and in accordance with the NJDEP's "Technical Requirements" and "Field Sampling Procedures Manual", May 1992. This section describes the technical approach to, and components of the Remedial Investigation (hereinafter "RI").

Technical Approach

The subsurface investigation is designed to investigate engineering properties of the subsurface that will influence potential cut-off designs as well as to collect hydrogeological data needed to understand the nature of groundwater flow near the Passaic River including the extent of tidal influence in near shore soils. The subsurface investigation will include the following components:

- performance of three (3) in-situ vane shear tests at the three (3) locations;
- excavation of five (5) test pits;
- completion of cone penetrometer (hereinafter "CPT") explorations at sixteen (16) locations;
- drilling of four (4) soil borings;

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- installation of twenty-four (24) piezometers (including 10 paired installations);
- installation of one (1) to five (5) groundwater monitoring wells; and
- collection of groundwater and soil samples.

Proposed explorations are shown on Figure 4. Proposed explorations relative to former site conditions are shown in Figure 5. Proposed exploration relative to present and former site structures are presented in Figure 6. Exploration rationales are presented in Table 1.

In Situ Vane Shear Testing. In Situ Vane Shear Testing will be conducted to determine the strength characteristics of the sediments outboard of the existing bulkhead. A Geonor vane shear testing apparatus will be used to measure shear strength at the three (3) locations shown on Figure 4. The Geonor vane shear testing will provide information regarding strength properties of the river sediments just outboard of the bulkhead. This data, combined with probable long-term fate of the river sediments (dredged, or not dredged), will then be used in the design of any IRA program. In Situ Vane Shear Tests will collect strength data on the sediments continuously from the surface of the river sediments to a depth of about 18 feet.

In addition to the Geonor vane shear testing, field measurements of undrained shear strength using a pocket penetrometer and/or pocket Torvane shall be made on samples of cohesive materials (organic silt, peat, and clays) when encountered in the borings.

Test Pits. Five (5) test pits will be excavated to characterize the fill materials in the former intertidal channels and to investigate the integrity of the decking on the bulkhead to determine if the decking has retained sufficient strength to be utilized as a structural support for the IRA Program. All test pits will be excavated during low tide to assure low water conditions and provide information in the intertidal zones.

Field observations will be made on all soil samples collected from the test pits. Additionally, all soil samples collected will be screened in the field using a photo ionization detector (hereinafter "PID"). The PID will be utilized to detect the possible presence of volatile organic compounds (hereinafter "VOCs"). All test pit activities will be supervised by a qualified field geologist or engineer. A test pit log will be prepared for each soil boring location containing, among other things, the results of field observations and PID screening.

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Cone Penetrometer Survey. Sixteen (16) CPT explorations (see Figure 4) will be conducted to identify significant geologic features that may affect groundwater movement and, as practicable, to identify the presence of MGP residuals. CPT probes will be equipped with pH, conductance and resistivity sensors in addition to the standard tip pressure and sleeve resistance sensors in order to gather preliminary physical and chemical data in the subsurface. The CPT explorations will be advanced ^{to 12 feet} into the confining layer which is anticipated to occur at approximately 30 to 60 feet bgs. The CPT explorations will be used to delineate the presence of the confining layer.

Soil Borings. Four (4) soil borings will be drilled to confirm/calibrate data collected during the CPT survey. Soil borings will terminate at the confining layer anticipated to be encountered at a depth of 30 to 60 feet bgs, or greater if required. Soil samples for geological characterization and laboratory analysis will be collected continuously during the drilling of all soil borings using a 2-foot long, 3-inch outside diameter (hereinafter "OD") split spoon sampler. This approach allows for an assessment of the upper soil strata.

Field observations will be made on all soil samples collected from the soil borings. Additionally, all soil samples collected will be screened in the field using a PID. The

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PID will be utilized to detect the possible presence of VOCs. All drilling activities will be supervised by a qualified field geologist or engineer. A soil boring log will be prepared for each soil boring location containing, among other things, the results of field observations and PID screening.

Piezometers. Twenty-four (24) piezometers, including ten (10) piezometer pairs, will be installed to collect data on groundwater flow directions and groundwater communication with the Passiac River. Groundwater flow data and over-all water mass balance considerations will help establish baseline conditions for comparing future Site conditions as well as assessing groundwater controls in conjunction with any interim remedial action. Piezometers will be located along the Site perimeter as well as at selected locations within the interior of the Site (see Figure 4). Variations in water levels will be measured continuously during the interim remedial investigation in selected piezometers during high and low groundwater events. All measurement events will also note tidal schedules and recent weather conditions.

Monitoring Wells. Groundwater quality data will be collected to assess chemical compatibility of materials to be used in construction and to provide information regarding the quality of groundwater. Up to five (5) monitoring wells are proposed, one upgradient and four downgradient wells. The upgradient monitoring well will

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be screened in the native soils which underlie the fill material. Two (2) downgradient monitoring wells will be screened in the fill material. The remaining two (2) downgradient monitoring wells will be screened in the underlying native soils. If a peat/organic layer is encountered in the upper 10 to 15 feet of native soil, the monitoring wells will be screened below this layer. If no peat/organic layer is encountered, these wells (one (1) upgradient and two (2) downgradient monitoring wells) will be screened in the upper 10 feet of native soil encountered. Exact well locations will be determined in the field based on field conditions encountered. No well will be installed at locations where non-aqueous-phase-liquids (hereinafter "NAPL") have been detected due to the difficulties associated with collecting representative groundwater samples in the presence of NAPLs.

2.2.2 Field Investigation Activities

2.2.2.1 Utility Markout. Utility markouts will be arranged for by the Contractor through the local Site personnel. The Site contains, among other underground utilities, an extensive network of subsurface water, steam and electric lines as well as a number of gas distribution facilities and associated interconnections. The Contractor will install semi-permanent markers (e.g., paint and stakes) to clearly locate all active underground utilities and, to the extent practicable, remnants of

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abandoned utilities and structures. All underground utilities will be depicted on a Site plan along with the approximate accuracy of the locations identified. Prior to conducting any intrusive activity on the Site, the utility markouts will be checked against the Site utility markout plan to ensure that all markers are in place. "One number to call" will be contacted by the Contractor, if necessary, at least 72 hours prior to conducting intrusive activities to arrange for proper utility clearances. In addition to utility markouts, a ground penetrating radar (hereinafter "GPR") survey of all proposed exploration locations will be performed in order to identify subsurface obstruction (e.g., abandoned pipes, foundations and rubber) which may interfere with investigation activities. Alternative non-intrusive survey methods (e.g., metal detectors or pipe and chain locators) may be used to supplement GPR. Information obtained from this survey will be used to adjust exploration locations to avoid potential obstructions.

2.2.2.2 Soil Investigation. The objective of the soil investigation will be to determine the stratigraphy and characteristics of the overburden as same relates to data requirements in support of the engineering designs for the IRA Program components and the assessment of groundwater movement and potential migration of MGP residuals in the overburden soils.

Three (3) in situ vane shear tests, five (5) test pits, 16 CPT explorations, and four (4) soil borings will be completed during this investigation. The borings and several CPT explorations will be completed with paired piezometers.

Exploration locations are shown on Figure 4. The rationale for the exploration locations are discussed in Table 1. A summary of the subsurface soil analytical sampling program is presented in Table 2. Details for the methods of drilling and soil sample collection will be provided in the QAPP.

In Situ Vane Shear Testing. In situ vane shear testing will be performed at three (3) locations (Figure 4) to provide information regarding strength properties of the river sediments just outward of the bulkhead. The vane shear testing will be conducted under the direction of an experienced geologist or geotechnical engineer. The testing will be performed in accordance with American Society of Testing Materials (hereinafter "ASTM") D-2573-72 using Geonor vane shear testing apparatus. Geonor vane shear tests will be conducted continuously from the sediment surface to a depth of about 18 feet.

Test Pits. The test pit survey is designed to: 1) determine shallow subsurface soil conditions at specific areas of the Site where former intertidal channels have been

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filled; and 2) characterize the structural integrity of the existing bulkhead structures with particular interest in the feasibility of incorporating the present structures into the IRA Programs engineering designs.

Five (5) test pits will be excavated using a backhoe at the locations shown on Figure 4. Test pits will be excavated to an approximate depth of ten (10) feet bgs, to the water table, or bucket refusal, whichever is shallowest. The test pits will be two (2) feet in width and eight (8) feet long. Immediately upon removal from the excavation, each backhoe bucket of excavated material will be screened with a PID for the presence of VOCs. Soils excavated from the test pits will be visually examined for evidence of contamination and characterized in the field by qualified field geologist or engineer. Excavated soils will be temporarily staged on a liner adjacent to each pit. Test pits will be back filled with excavated material in the order that it was removed, with the deepest material being back filled first. Soil samples for laboratory analyses will be collected from the backhoe bucket.

Cone Penetrometer Survey. The CPT survey will be used to characterize subsurface stratigraphy, depth to the watertable and the potential presence of MGP residuals. The CPT survey will be conducted using probes that will measure pH, conductivity, resistivity, pore pressure, tip pressure and sleeve resistance. CPT logs will be

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interpreted by a qualified field geologist or engineer. Four confirmatory soil borings (B-1 through B-4) will be drilled to correlate/calibrate CPT results with the actual subsurface conditions. Each exploration will be advanced to a depth necessary to characterize subsurface stratigraphy, approximately 60 feet bgs or a minimum of five (5) feet into a confining layer whichever is shallower. Explorations will terminate at a shallower depth if geologic conditions prevent full penetration. A total of 16 exploration locations will be drilled. Exploration locations are depicted in Figure 4.

Soil Borings. Soil borings (locations are depicted in Figure 4 will be drilled to calibrate/confirm the results of the CPT survey. Soil borings B-1 through B-3 are located along the bulkhead. Soil boring B-4 is located at the northern corner of the Site and is intended to provide geologic data from a potentially upgradient area. All four (4) soil borings will be completed as a shallow and deep piezometer pair, one screened in the upper fill and the other in the underlying native soil. Borings will be drilled principally using 4.25-inch inside diameter (hereinafter "ID") hollow-stem augers (hereinafter "HSAs"). Subsurface samples will be collected continuously using a 3-inch OD split-spoon sampler driven in accordance with ASTM D-1586. All soil samples collected from soil borings will be characterized by field observations and screened by a PID for indications of contamination. Selected soil samples will be submitted to the laboratory for chemical analyses. 3-inch OD Shelby tube samples

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of organic silt/peat and/or silty clay strata will be collected following the first split spoon sample in which the material is encountered. Shelby tube samples will be collected and submitted to the laboratory for determination of permeability.

Collection of Soil Samples for Laboratory Analysis. Laboratory testing of soil samples will include geotechnical related analyses to determine index and engineering properties of the soils encountered at the Site, and chemical analyses to determine the presence of contaminants.

Geotechnical Laboratory Testing. The following laboratory tests will be done to allow initial quantifications of the index and engineering properties encountered at the Site.

- Grain Size Distribution Analyses (ASTM D-422/D-2216). Sufficient analyses shall be done on each major soil unit encountered. Information from these tests will confirm visual descriptions and provide quantitative insight on permeability and other soil properties. Twelve (12) grain size distribution analyses have been included in this scope of work.

- Triaxial Permeability Tests (ASTM D-5084-90). These tests will be run on specimens from Shelby tube samples of cohesive soils encountered. It is not known, however, if sufficient samples will be recovered at this time. For planning purposes up to eight (8) triaxial permeability tests have been included in this scope of work.

Chemical Laboratory Testing

Test Pits. A minimum of one (1) soil sample will be collected for laboratory analyses from each of the five test pits. The soil sample will be collected from an interval where visual observations or instrumental screening results indicate the potential presence of contamination or, if no evidence of contamination is encountered, the sample will be collected from the bottom of the test pit. All samples submitted for laboratory analyses will be analyzed for VOCs, semi-volatile organics (hereinafter "SVOCs"), target analyte list (hereinafter "TAL") inorganics and total petroleum hydrocarbons (hereinafter "TPH"). In addition, if visible free product is observed in any of the test pits, a sample of the material will be collected and submitted to the laboratory for hazardous waste characterization.

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Soil Borings. Up to three (3) soil samples will be collected and submitted for laboratory analyses from each of the four (4) soil borings. Soil samples will be collected from the interval immediately above the water table and from the bottom of each soil boring. A third soil sample will be collected and submitted for laboratory analyses if visual or instrumental evidence of contamination is encountered in split-spoon samples collected from the soil boring. All samples submitted for laboratory analyses will be analyzed for VOCs, SVOCs, TAL, inorganics and TPH. In addition, if any visible free product is observed in a soil boring, a representative sample of the material will be collected and submitted to the laboratory for hazardous waste characterization.

2.2.2.3 Groundwater Investigation. The objective of the groundwater investigation is to measure groundwater flow directions in both the fill and underlying shallow overburden soil and characterize hydraulic communication between groundwater beneath the Site and the Passaic River.

Piezometers. Piezometers will be constructed of 3/4-inch ID schedule 40 polyvinyl chloride pipe (PVC). The screen will have 0.01-inch machine slots and will be a maximum of five (5) feet in length. The deep piezometers, designated by the suffix "A", are intended to provide data from groundwater in the native soils underlying the

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fill. The shallow piezometers, designated by the suffix "B", will be screened in the fill material to provide data on shallow groundwater.

A total of 24 piezometers will be installed. Eleven (11) piezometers will be installed at CPT exploration locations. Eight (8) piezometers will be installed as pairs in the four (4) soil borings. The remaining five (5) piezometers will be installed where no soil borings or CPT locations are proposed. At these five (5) locations, and at CPT locations where a second piezometer will be installed, a blank CPT tip will be used to pre-punch the piezometer borehole. Piezometer locations are depicted on Figure 4.

Groundwater Monitoring Wells. Groundwater monitoring wells will be constructed of 2-inch ID Schedule 40 PVC pipe. The well screens will have 0.01-inch machine slots. PVC riser pipe and well screens will be decontaminated by steam cleaning before installation. Screens will be 10 feet in length and a washed silica sandpack will be installed in the annulus between the borehole wall and the screen. The sandpack will extend a minimum of two (2) feet above the top of the screen. A minimum of two (2) feet of bentonite pellets will be placed above the sandpack and will be hydrated with potable water upon installation. The remainder of the borehole will be backfilled with bentonite-cement grout installed through a tremie

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pipe. Monitoring wells will be secured against tampering by using water-tight, flush-mounted locking road boxes which will be set in place in a minimum of two (2) feet of concrete. After the well(s) are installed and the water level(s) have equilibrated, the water level(s) will be measured. The elevation of the well riser(s) will be surveyed to the nearest 0.01 feet by a New Jersey-licensed surveyor (Subsection 2.2.3).

In accordance with NJDEP Field Sampling Procedures Manual, May 1992, all monitoring wells will be developed until producing silt-free water or for one (1) hour, whichever occurs first. Well development will be performed using a submersible downhole pump, a positive displacement pump, or an Arch well development pump, which will be decontaminated between well locations. Development water will be collected in DOT approved 55-gallon drums, analyzed for disposal characteristics, and disposed of in accordance with the procedures outlined in Subsection 2.2.4.2.

Groundwater Sampling. Immediately prior to sampling, monitoring wells will be purged a minimum of three (3) well volumes, or until field parameters of temperature, pH, redox potential (hereinafter "Eh") and specific conductance are stable. The monitoring well(s) will then be sampled once and analyzed for VOCs,

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SVOCs, metals and TPH. Analytical methods to be used are discussed in Section 2.2.4.1 and summarized in Table 2.

2.2.2.4 Groundwater Level Monitoring. To assess variations in groundwater levels as well as to evaluate tidal influences on the water table at the Site, groundwater levels will be measured continuously in selected piezometers during high and low groundwater events. All measurement events will also note tidal schedule and recent weather conditions. Continuous water level measurements will be collected utilizing pressure transducers and data loggers.

2.2.3 Site Topographic Survey

A two-phased topographic survey of the Site will be performed by a New Jersey-licensed land surveyor. The first phase of the topographic survey, conducted during preliminary activities, will consist of generating a topographic base map at a scale of 1 inch equals 50 feet, with 2-foot vertical elevation contours. This map will contain significant surface features and landmarks on the Site. The map will show the former Site boundaries in relation to current Site conditions. The topographic map will use New Jersey Plane Coordinate (1927) datum for horizontal grid markings.

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The second phase of the topographic survey will consist of locating monitoring wells, soil borings, test pits, surface water and sediment sample locations, and other control points identified during the FRI. The inner casing (i.e., riser) of the monitoring wells will be surveyed for both horizontal and vertical location to a degree of accuracy of 1 foot horizontal and 0.01 foot vertical. The ground surfaces at each monitoring well will be surveyed for vertical location to a degree of accuracy of 0.1 foot. These locations will then be transferred to and identified on the base topographic survey map.

2.2.4 Decontamination and Materials Management

Field Sampling Plan logistics associated with equipment decontamination, development water and decontamination fluids disposal, and drill cutting disposal will be as follows:

2.2.4.1 Equipment Decontamination. Decontamination of equipment, well screens and other materials will be conducted at a designated on-Site decontamination location. A decontamination pad will be constructed to adequately collect all decontamination fluids. Equipment, well screens and casing will be decontaminated using pressurized hot water or steam to remove oil and grease. An on-Site public

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water supply source will be utilized during field work and decontamination activities. At the end of each day, all decontamination fluids will be pumped in to DOT-approved drums. Drums will be labeled and staged appropriately. Decontamination procedures will be more specifically detailed in the HASP.

Drilling tools will also be decontaminated at a designated on-Site decontamination location. Decontamination will be accomplished by steam cleaning. All split-spoon samplers and other sampling equipment will be field-decontaminated in accordance with the "NJDEP Field Sampling Procedures Manual" (May, 1992) and will be conducted as follows:

1. Non-phosphate detergent plus tap water wash
2. Tap water rinse
3. Distilled/deionized water rinse
4. 10 percent nitric acid solution rinse*
5. Distilled/deionized water rinse*

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6. Acetone (pesticide-grade) rinse (only if sample is to be analyzed for organics)**
7. Air dry completely
8. Distilled/deionized water rinse

NOTES: Steps 6, 7, and 8 will be conducted only when samples are being collected for organics.

* Only if sample is to be analyzed for metals.

** Acetone is an acceptable cleaning solvent provided it is allowed to totally evaporate via air drying or a nitrogen blowout and is followed by a distilled/deionized rinse.

If no gross contamination is observed, split-spoon samplers and other field sampling equipment may be field-decontaminated utilizing the following procedure:

1. Laboratory grade glassware detergent and tap water scrub to remove visual contamination.

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2. Generous tap water rinse.
3. Distilled and deionized (ASTM Type II) water rinse.

2.2.4.2 Development Water and Decontamination Fluids Disposal. Development water and decontamination fluids will be collected on-Site in appropriate-size containers (e.g., DOT approved 55-gallon drums or tank trucks), and transported to a designated on-Site storage location. The on-Site storage location will be located in a secure area away from areas of significant work activities. The storage area will be lined with 10-millimeter thick plastic sheeting to limit the potential for discharges. All containers removed from an area of investigation (e.g., test pit or boring location) to the storage location will be labeled, inventoried, and logged prior to leaving the investigation area, and later classified for disposal in accordance with all Federal, State, and local laws and regulations.

For other locations, drill cuttings will be collected in DOT approved 55-gallon drums and stored at the on-Site storage location. As previously indicated, this storage area will be lined with 10-millimeter thick plastic sheeting to limit the potential for discharges. All containers removed from an area of investigation for transportation to the storage location will be labeled, inventoried, and logged prior to leaving the

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investigation area, and later classified for disposal in accordance with all Federal, State, and local laws and regulations.

2.2.5 Sample Analysis Methods

2.2.5.1 Laboratory Analysis. Laboratory analyses are planned for soil and groundwater samples. The parameter groups selected for laboratory analysis are summarized in Table 2. The parameter groups selected for laboratory analysis include the following:

- Target Compound List (hereinafter "TCL") VOCs, SVOCs, and TAL inorganic parameters, using USEPA-CLP-SOW 8/91 Methodology (Statement of Work) (USEPA, 1991) for soil and water. Also during VOC analysis, methyl tertiary butyl ether and tertiary butyl alcohol will be quantified, and up to 15 VOC to 20 SVOC tentatively identified compounds (hereinafter "TIC") will be identified (if they are detected).
- TPH, using USEPA Test Method 3550/418.1

The selected laboratory will meet the quality assurance requirements stipulated in the NJDEP Technical Requirements for Site Remediation (June 1993). PSE&G will provide the name of the laboratory selected to perform the analyses to the NJDEP, for review, a minimum of 14 calendar days prior to initiation of intrusive sampling activities.

Analyses will be performed by a NJDEP-certified laboratory. NJDEP Contract Laboratory Program (hereinafter "CLP") reduced deliverables will be provided by the laboratory performing the CLP analyses. Non-CLP reduced deliverables for the following will be provided:

- Hazardous characteristics analyses (soil samples)
- TPH and TDS analyses (groundwater samples)

CLP-reduced deliverable laboratory data will be submitted to the NJDEP concurrent with the submission to the validating company and all communication relative to this data will be conducted between the NJDEP Case Manager and the PSE&G Project Manager.

2.2.5.2 Data Validation. Calculations made during data validation are described in the referenced analytical methods. Validation of measurements is a systematic process of reviewing a body of data to provide assurance that the data are adequate for the intended use. The process includes the following activities:

- auditing measurement system calibration and calibration verification
- auditing QC activities
- screening data sets for outliers
- reviewing data for technical credibility versus the sample site setting
- auditing field sample data records and chain-of-custody documentation
- checking intermediate calculations
- certifying this process

Data validation activities for CLP-reduced deliverables for the Site will be performed in accordance with "Quality Assurance Data Validation of Analytical Deliverables, TCL Organics and TAL Inorganics", New Jersey Department of Environmental Protection, Standard Operating Procedure, Bureau of Environmental Measurements and Quality Assurance (hereinafter "BEMQA") No. 5.A.13 and 5.A.02, respectively. The data validation report format for CLP-reduced deliverables will be prepared in accordance with "Data Validation Report Format for Analytical Deliverables, TCL

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Organics and TAL Inorganics", New Jersey Department of Environmental Protection, Standard Operating Procedure BEMQA No. 5.A.15. The RI Contractor will consult with the NJDEP to determine the currently approved data validation method prior to the commencement of RI field activities.

Data validation activities and report format for CLP-reduced deliverables will be provided in the QAPP.

2.3 TASK 3 - ENGINEERING ASSESSMENT AND CONCEPTUAL DESIGN

The purpose of this task is to utilize the understanding of relevant site structures, subsurface soils, site hydrogeology, and site contaminants gathered in Tasks 1 and 2 to identify, assess and propose a conceptual design of engineering controls that can be implemented in the IRA Program to:

- eliminate communication of the Site with the Passaic River;
- manage Site hydrogeology (both surface and groundwater); and

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- utilize the on-Site water treatment plant to treat any extracted groundwater to the maximum extent practicable.

At least one (1), but no more than four (4) remedial options, will be identified, and evaluated, on the basis of the following criteria:

- implementability;
- long-term effectiveness;
- short-term effectiveness;
- overall protection of human health;
- ability to reduce toxicity, mobility, or volume of contaminants; and
- cost.

Based on this evaluation an IRA Program will be recommended to achieve the objectives identified above. A conceptual design for the IRA Program will be selected and presented to PSE&G. The conceptual design will include, at a minimum the following elements:

- general Site layout/arrangement;
- typical details of technology to be employed;

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- definition of key performance criteria;
- cost estimate with preliminary bill of materials; and
- schedule of construction.

2.4 TASK 4 - DETAILED DESIGN AND COST ESTIMATE

This task will include all activities necessary to prepare and deliver to PSE&G a complete design package for the selected IRA Program. The design will be signed and sealed by a professional engineer registered in the state of New Jersey. The design deliverable will be in a form such that it can be used in conjunction with a request for proposal for implementation of the IRA Program. The design will proceed in a phased manner with review by PSE&G occurring at the conclusion of each phase. A specific scope of services for this task will be prepared at the conclusion of Task 3, Engineering Assessment and Conceptual Design and submitted to PSE&G for review, comment and approval. Once approved, the detailed design task will occur concurrently with preparation of an IRA Program Report (see Section 2.5).

2.4.1 Preliminary (30 Percent) Design

The preliminary design submittal will provide regulatory agencies and PSE&G an opportunity to review and comment on the direction and approach of the design. Preliminary design elements reviewed during this phase of the work include the Design Criteria Report and preliminary plans and specifications.

The Design Criteria Report will document all design criteria as they are developed and provide preliminary process diagrams for the selected alternative. This document will also include all necessary backup (computations, assumptions, modeling results, vendor submittals, etc.) to support details of the design.

Preliminary plans and specifications included in the 30 percent submittal will include at a minimum: Preliminary Site Plan, Preliminary Layout of containment system, Preliminary Layout of Hydrologic (ground and surface water) Controls, Preliminary Sections of containment system, Preliminary List of Details, List of Specifications, and Identification of Permitting Issues.

2.4.2 Intermediate (60 Percent) Design

The intermediate design documents will reflect development of the project design based on feedback received on the preliminary design documents and continued development of the design details. This package will include a revised Design Criteria Report with specific criteria for cutoff effectiveness; geotechnical properties of subsurface materials, groundwater behavior and design of controls; surface water characteristics and design of controls; assessment of ability of existing pre-treatment system to handle water flows prior to discharge to the POTW; structural design of proposed containment system incorporating a concurrent function of waterfront bulkhead; and design of modifications to Site utilities affected by the IRA.

Preliminary plans will be revised to reflect comments and further development of the design. Additional plans may include additional sections, details, elevations, plumbing, mechanical, electrical, and instrumentation depending on the magnitude of changes, if any, to the existing pre-treatment facility. In addition, preliminary technical specifications (civil, structural, plumbing, mechanical, electrical, and instrumentation) will be prepared.

2.4.3 Pre-final (90 Percent)/Final Design

The intermediate design documents will be revised to reflect comments from PSE&G and the NJDEP, if available, and will give the project participants the final opportunity to request changes prior to the finalizing the package for signing and sealing and preparation of construction bid documents. Once the design has been finalized and sealed, PSE&G will take the final package, prepare the necessary documents to solicit bids for construction, and issue the Request for Proposal (hereinafter "RFP") through its Procurement Materials Management Group.

2.4.4 Detailed Cost Estimate

Estimates to construct the IRA Program as designed will be generated for each step of the design. The final cost estimate will be of sufficient detail to generate an estimate that is within an accuracy of plus or minus 10 percent.

2.4.5 Contractor Oversight

The Contractor implementing the WP shall have responsibility for oversight of the construction of the IRA so as to insure that the IRA is constructed in accordance with the design specifications developed in Task 4.

2.5 REPORT

A report will be submitted within seven (7) weeks of receipt of validated analytical results from the groundwater sampling. The report will present conclusions based on evaluations and interpretations of data collected during the field program. Hydrogeologic, geologic, and engineering data will be assessed to provide a comprehensive understanding of Site conditions, an evaluation of potential controls and a description of the conceptual remedial design. The major sections of the report will include the following:

- summary of exploration and sampling programs;

- Site characterization including review of available relevant historic records;
- results from field observations and laboratory analyses;
- field and laboratory data assessment;
- conclusion(s) and recommendation(s) for the engineering controls for the IRA Program; and
- detailed design and cost estimate for the installation of all facilities required to eliminate the communication between the Site and the Passaic River.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

3.1 PUBLIC SERVICE PROJECT MANAGER

The PSE&G Project Manager, Thomas Leimsider, is responsible for coordinating and overseeing Project work activities.

3.2 CONTRACTOR PROJECT ORGANIZATION

The Contractor's project organization is responsible for achieving project objectives. Personnel assigned to the project will be qualified and responsible for initiating and conducting project activities. The key positions and specific responsibilities of these positions are discussed in Subsection 4.3.

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3.3 SPECIFIC RESPONSIBILITIES

Responsibilities of the project positions and support organizations are summarized as follows:

Contractor Corporate Officer. The Corporate Officer is responsible for: committing the corporate resources necessary to conduct program work activities; supplying corporate-level input for problem resolution; and assisting the Project Team as needed in Project implementation.

Contractor Program Manager. The Program Manager is responsible for the overall project. Their specific responsibilities include the following:

- initiating project activities
- identifying project staff, equipment, and other resource requirements
- interfacing with PSE&G on all cost, contractual, personnel, and other administrative matters

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- attending meetings with PSE&G and the NJDEP to discuss technical matters
- monitoring task activities, and adjusting efforts or resources, as required, to help ensure that established budgets, schedules, and work programs are maintained
- regular briefing of PSE&G company officials and Project teams on the status of the Project

Contractor Project Manager. The Contractor Project Manager for the Site is responsible for the following:

- interfacing with the PSE&G Project Manager concerning technical matters;
- supervising the technical performance of the project staff and field subcontractors;

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- working closely with the Program Manager, Health and Safety Officer, and Technical Review Committee (hereinafter "TRC") to help ensure successful Project completion; and
- attending meetings with PSE&G and the NJDEP to discuss technical matters.

Technical Review Committee. A TRC, made up of senior technical staff will assist the Program Manager and Project Manager by reviewing the technical aspects of the project to make sure that services reflect the accumulated experience of the firm and to review data and interpretations for completeness, consistency, and overall quality.

Data Validation Personnel. The names and resumes of Contractor personnel who will be responsible for validating the analytical data from the laboratory will be provided to the NJDEP.

4.0 SCHEDULE FOR PROJECT ACTIVITIES

4.1 DAILY WORK ACTIVITIES

Unless otherwise authorized by PSE&G, Work Plan activities will not commence before 7:00 a.m. and will not extend beyond 7:00 p.m. Furthermore, unless otherwise authorized by PSE&G, Work Plan activities will be limited to Monday through Friday.

4.2 SCHEDULE

The proposed project schedule is shown in Figure 7. The field investigation will proceed in two phases. The initial phase will consist of all intrusive activities (i.e., Geonor vane shear testing, test pitting, CPT, soil borings, and piezometer and groundwater monitoring well installation). The second phase will consist of groundwater sampling and synoptic and continuous measurement of groundwater elevations. Groundwater sampling will take place a minimum of two weeks after the monitoring wells have been installed and developed.

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The NJDEP will be notified verbally and in writing a minimum of 14 days prior to initiating field investigation activities. A laboratory turnaround of four (4) weeks has been planned. Data validation of all samples will be completed before initiating data interpretation. The draft Report will be completed within 11 weeks of the receipt of validated groundwater sample results.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

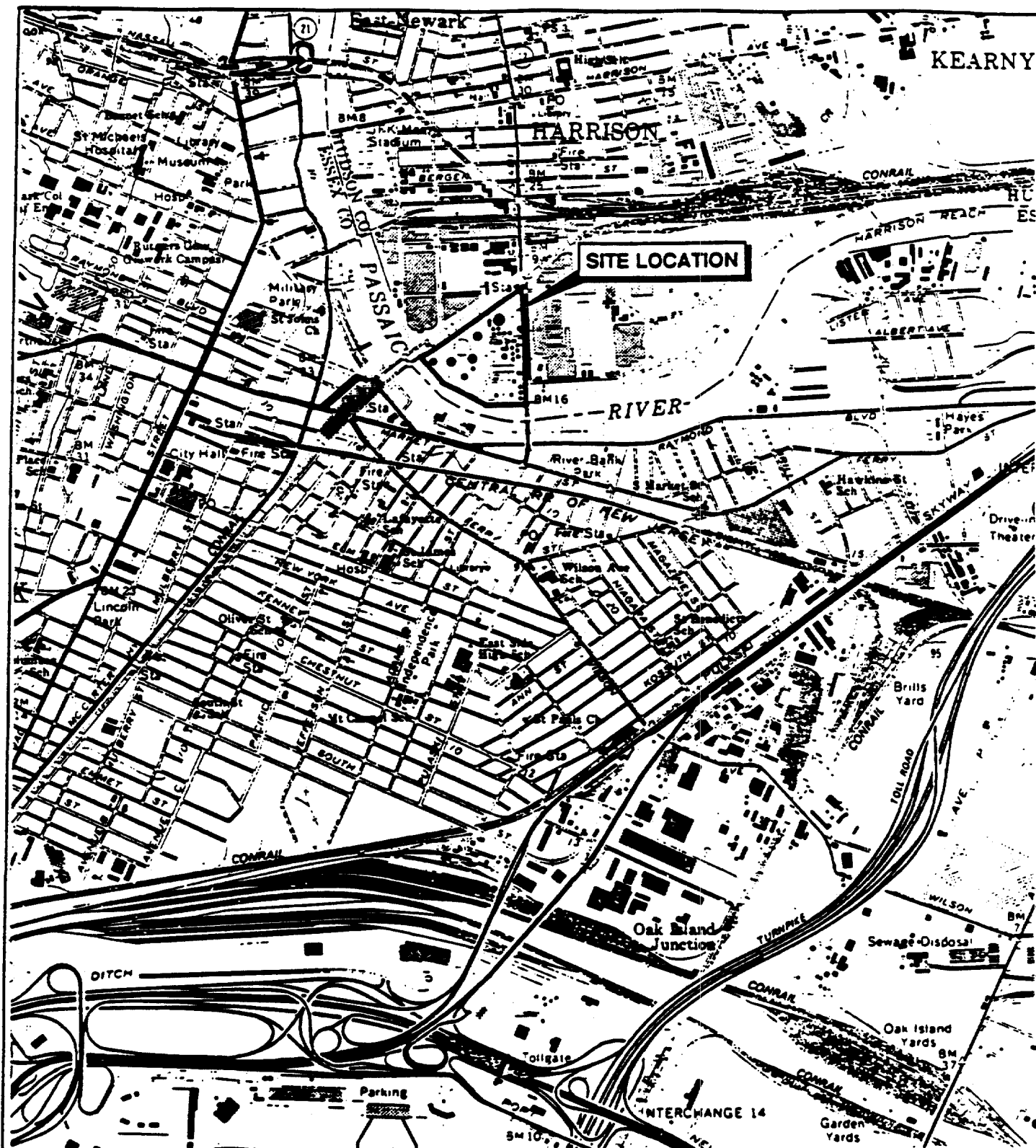
ASTM	American Society of Testing Materials
BEMQA	Bureau of Environmental Measurements and Quality Assurance
bgs	below ground surface
CCR	cyclic catalytic reforming
CLP	Contract Laboratory Program
CPT	Cone Penetrometer
CWG	carbureted water gas
Eh	redox potential
FRI	Focused Remedial Investigation
GPR	ground penetrating radar
HASP	Health and Safety Plan
HSAs	hollow-stem augers
ID	inside diameter
IRA	interim remedial actions
LPA	liquid petroleum air
MGP	manufactured gas plant
MMCFD	million cubic feet per day
MOA	Memorandum of Agreement
NAPL	non-aqueous phase liquid
NJDEP	New Jersey Department of Environmental Protection
OD	outside diameter
PID	photoionization detector
POTW	Publically Owned Treatment Works
PSE&G	Public Service Electric and Gas Company
PVC	polyvinyl chloride

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

QAPP	Quality Assurance Project Plan
RFP	Request for Proposal
RI	Remedial Investigation
Site	Harrison Gas Plant site
SNG	synthetic natural gas
SVOCs	semi-volatile organic compounds
TAL	Target Analyte List
TCL	Target Compound List
TETCO	Texas Eastern Corporation
TIC	Tentatively Identified Compounds
TPH	total petroleum hydrocarbons
Transco	Transcontinental Gas Pipeline Corporation
TRC	Technical Review Committee
USCG	United States Coast Guard
VOCs	volatile organic compounds
WP	Work Plan

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SOURCE: USGS TOPOGRAPHIC QUADRANGLE 7.5-MINUTE SERIES,
ELIZABETH, NJ-NY, 1967 (PHOTOREVISED 1981).



SCALE IN FEET



FIGURE 1
SITE LOCATION PLAN
HARRISON GAS PLANT
HARRISON, NJ

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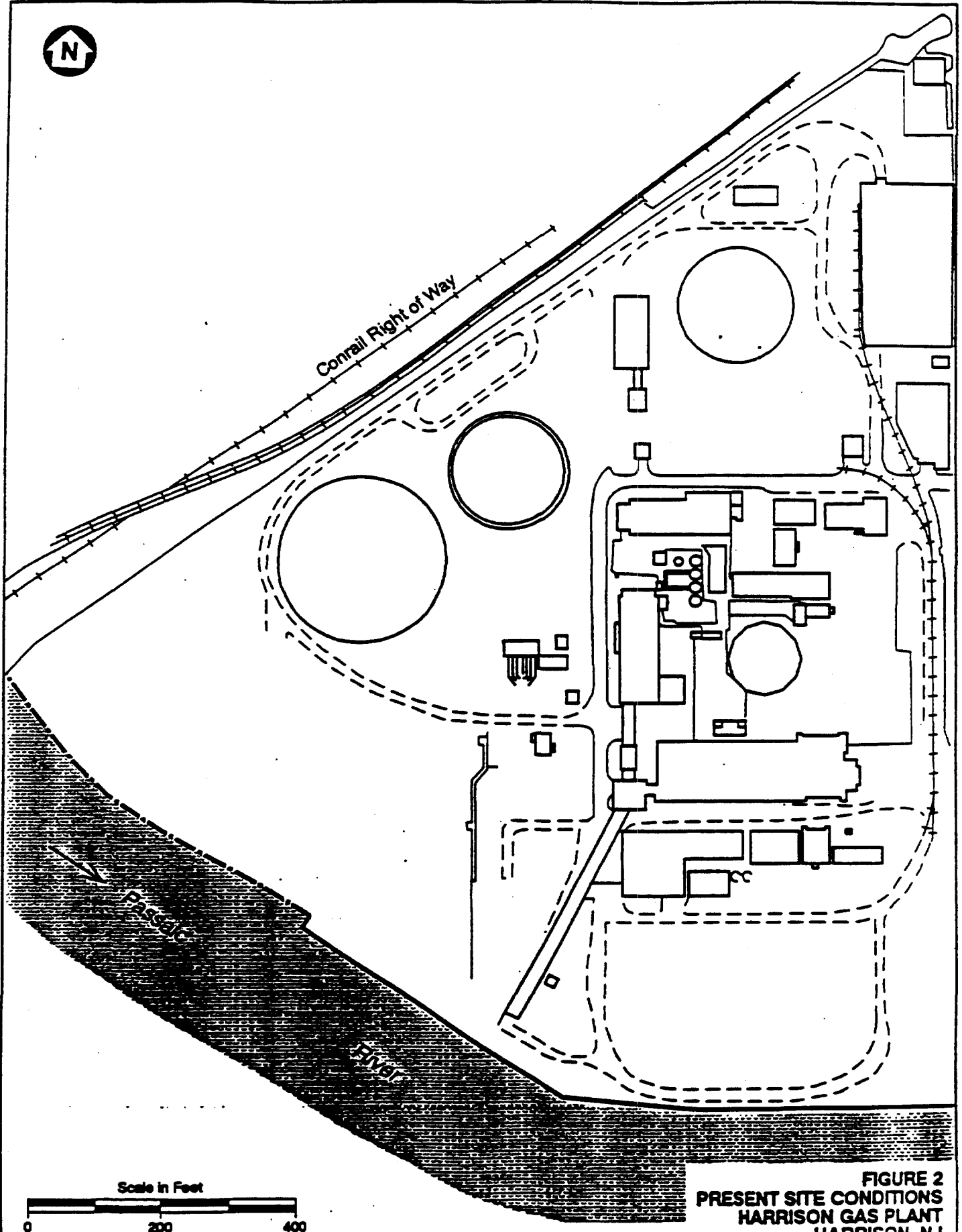








FIGURE 2
PRESENT SITE CONDITIONS
HARRISON GAS PLANT
HARRISON, NJ

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Legend

-  Former Foundation
-  Former Intertidal Channel
-  Former Meadow
-  Former Low Fill
-  Former High Fill
-  Former Oil Tank

Conrail Right of Way

River

Note: Intertidal channel data from
plans prepared by Public Service
Production Company, 9/10/24.

Scale in Feet



FIGURE 3
FORMER SITE CONDITIONS
CIRCA 1924/PRESENT
HARRISON GAS PLANT
HARRISON, NJ

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Legend

- ◆ Proposed CPT Exploration Location
- ⊕ Proposed Soil Boring Location
- ⊞ Proposed Geonor Vane Shear Testing Location
- ⊙ Proposed Piezometer Installation
- ⊞ Proposed Test Pit Location

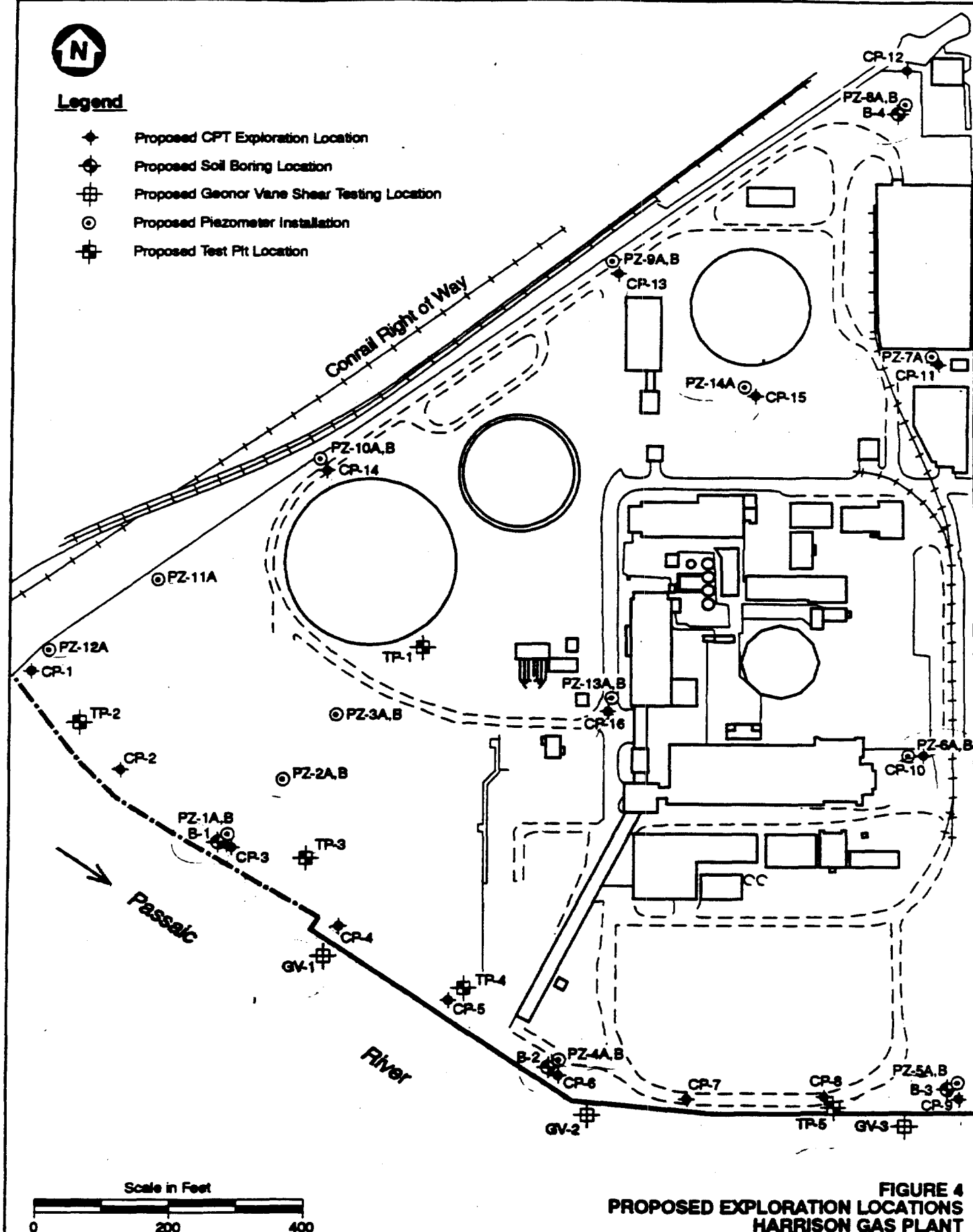


FIGURE 4
PROPOSED EXPLORATION LOCATIONS
HARRISON GAS PLANT
HARRISON, NJ

ABB Environmental Services, Inc.

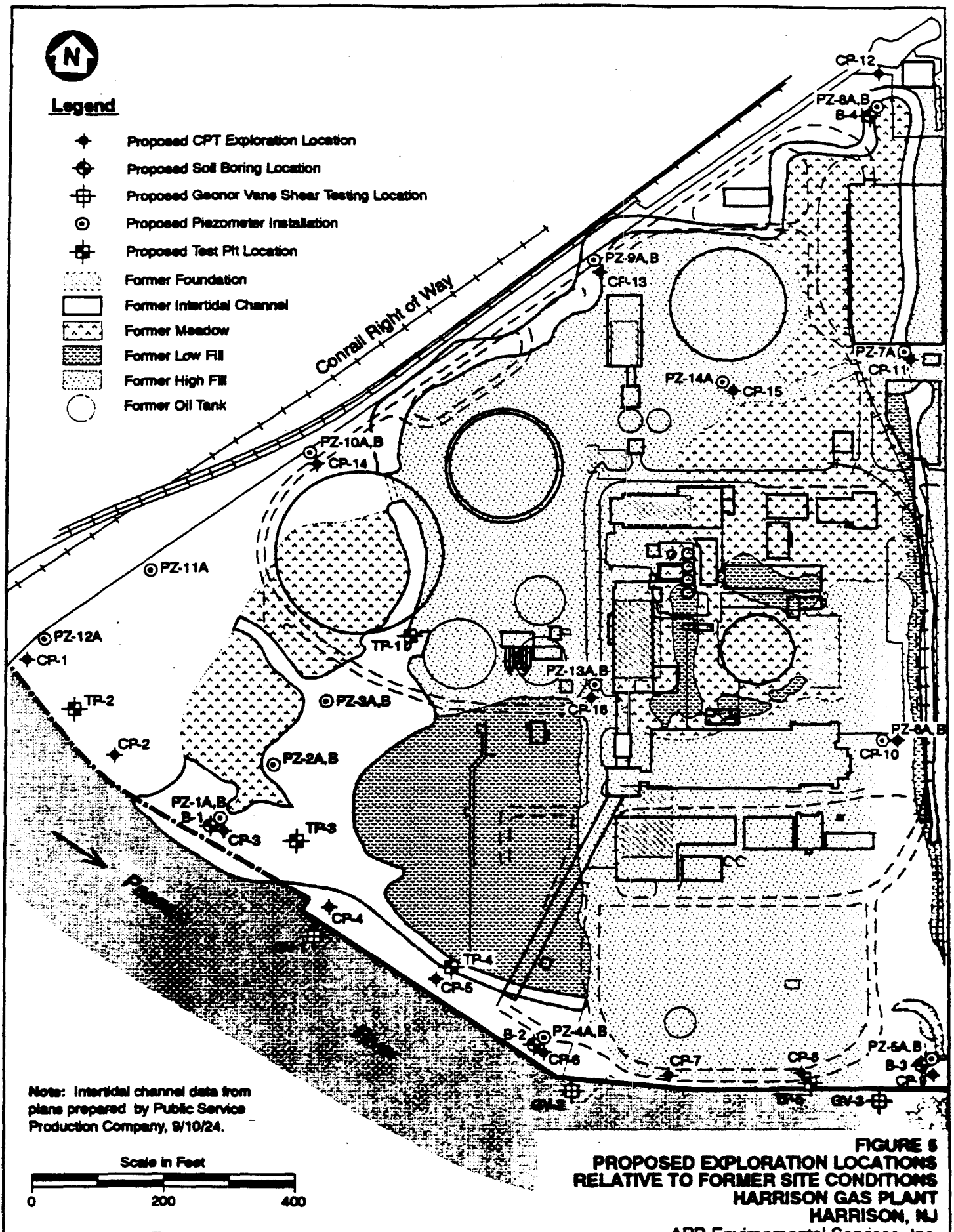
WB407041D(A)123

850000070



Legend

- ◆ Proposed CPT Exploration Location
- ⊕ Proposed Soil Boring Location
- ⊞ Proposed Geonor Vane Shear Testing Location
- ⊙ Proposed Piezometer Installation
- ⊞ Proposed Test Pit Location
- ▨ Former Foundation
- ▭ Former Intertidal Channel
- ▨ Former Meadow
- ▨ Former Low Fill
- ▨ Former High Fill
- Former Oil Tank



Note: Intertidal channel data from plans prepared by Public Service Production Company, 9/10/24.

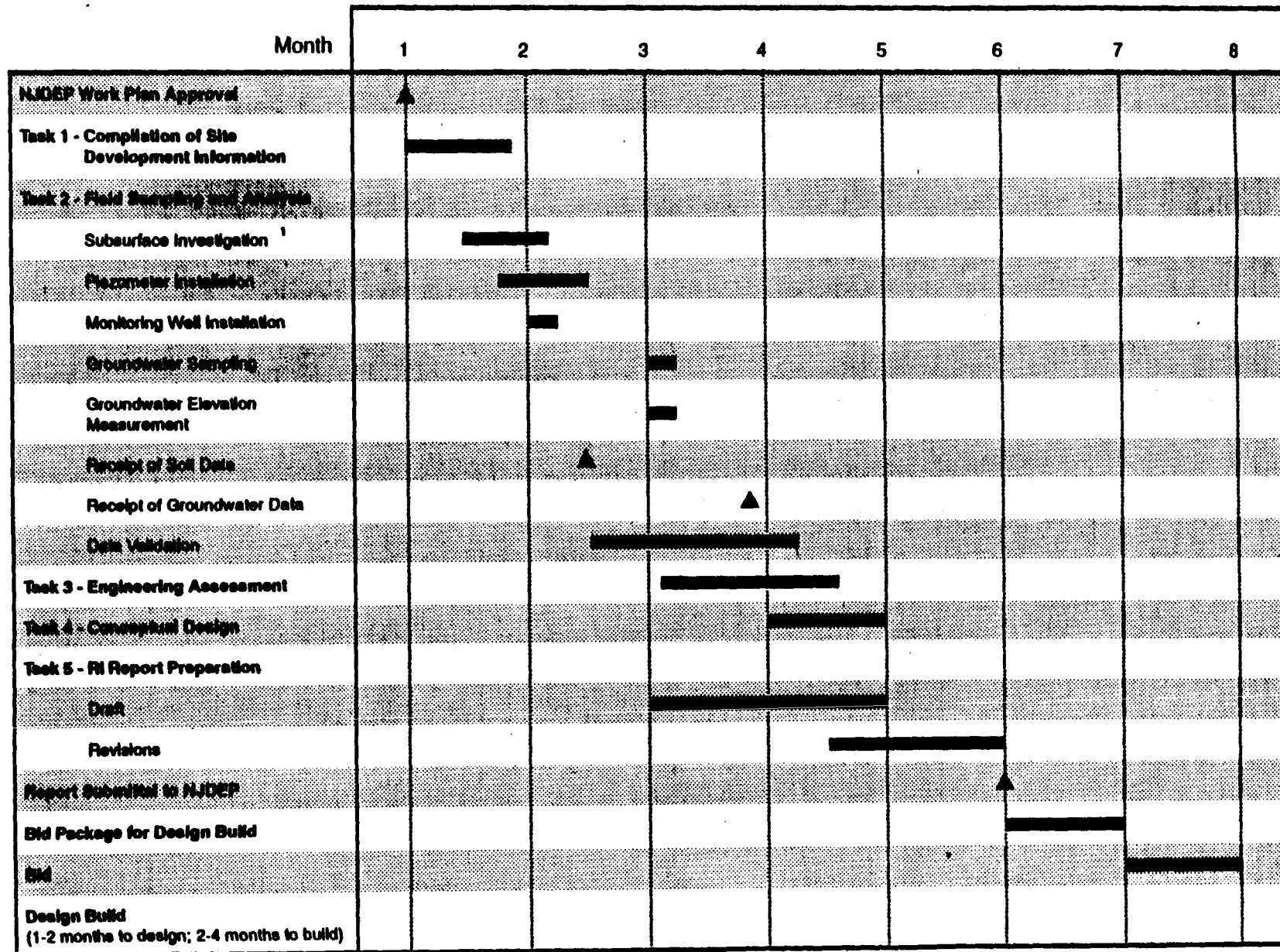
Scale in Feet



FIGURE 5
PROPOSED EXPLORATION LOCATIONS
RELATIVE TO FORMER SITE CONDITIONS
HARRISON GAS PLANT
HARRISON, NJ

ABB Environmental Services, Inc.

850000072



Key

▲ = Project Milestone

¹ Includes In Situ Vane Shear Tests, Test Pits, CPT Survey and Soil Borings

FIGURE 7
REMEDIAL INVESTIGATION PROJECT SCHEDULE
HARRISON GAS PLANT

ABB Environmental Services, Inc.

Table 1
Technical Approach Rationale
Harrison Gas Plant Site
Harrison, New Jersey

Exploration Identification	Location	Estimated Depth (Feet, bgs)	Rationale
Test Pits			
TP-1	Southeast of the Holder No. 3, at the approximate location of the former tidal channel.	6 - 10	Obtain data concerning subsurface soil conditions above the water table and visually characterize the material used to fill the former tidal channel.
TP-2 through TP-5	Behind the bulkhead on the along the shoreline (TP-3 is located at the mouth of the former tidal channel).	6 - 10	Obtain data concerning subsurface soil conditions above the water table and characterize the back fill material and evaluate the integrity of the decking.
CPT Survey			
CP-1 through CP-9	Along the shoreline, spaced 200 feet on center.	50	Obtain data concerning geological conditions along the east back of the Passaic River. Locate and characterize the confining layer, if present, and identify area where MGP residual may be present.
CP-10 through CP-14	Along the inland perimeter of the Site.	50	Obtain data concerning geological conditions along the inland perimeter of the Site. Locate and characterize the confining layer, if present, and identify area where MGP residual may be present.
CP-15 and CP-16	Within the interior of the Site.	50	Obtain data concerning geological conditions along the interior portions of the Site. Locate and characterize the confining layer, if present, and identify area where MGP residual may be present.

850000073

Table 1
Technical Approach Rationale
Harrison Gas Plant Site
Harrison, New Jersey

Exploration Identification	Location	Estimated Depth (Feet, bgs)	Rationale
<u>Soil Borings</u>			
B-1 through B-3	Along the shoreline adjacent to CP-2, CP-5 and CP-8 respectively.	30 - 60 (10 feet below the tunnel invert or the top of the confining layer)	Obtain geological data to correlate with data collected during the CPT survey and provide geological samples for visual and laboratory characterization. Soil borings will be completed with the installation of paired piezometers.
B-4	Northern corner of the Site.	30 - 60	Obtain geological data to correlate with data collected during the CPT survey and provide geological samples for visual and laboratory characterization. Soil borings will be completed with the installation of paired piezometers.

850000074

Table 1
Technical Approach Rationale
Harrison Gas Plant Site
Harrison, New Jersey

Exploration Identification	Location	Estimated Depth (Feet, bgs)	Rationale
<u>Single and Paired Piezometers</u>			
PZ-1 through PZ-3	Western end of the bulkhead, adjacent to CP-2, aligned perpendicular to the river bank.	Shallow: 5 - 15 Deep: 30 - 50	Characterize vertical and horizontal groundwater gradients along the bulkhead as well as characterize potential tidal influence on groundwater flow at the Site.
PZ-4 and PZ-5	Along the shoreline adjacent to CP-6 and CP-8 respectively.	Shallow: 5 - 15 Deep: 30 - 50	Characterize groundwater gradients and flow directions, as well as evaluate hydraulic communication between the Site and the Passiac River.
PZ-6 through PZ-12	Along the inland perimeter of the Site.	Shallow: 5 - 15 Deep: 30 - 50	Characterize groundwater gradients and flow directions in both the fill material and the underlying soils within the interior portions of the Site.
PZ-13 and PZ-14	Within the interior of the Site, adjacent to CP-15 and CP-16 respectively.	Shallow: 5 - 15 Deep: 30 - 50	Characterize groundwater gradients and flow direction in both the fill material and the underlying soils within the interior portion of the Site.
<u>Monitoring Wells</u>			
MW-1	To be determined.	15 - 25	Characterize groundwater in native soils upgradient from gas manufacturing area.
MW-2 and MW-3	To be determined.	5 - 15	Characterize groundwater in fill soils downgradient from gas manufacturing area.
MW-4 and MW-5	To be determined.	15 - 25	Characterize groundwater in native soils downgradient from gas manufacturing area.

850000075

Table 1
Technical Approach Rationale
Harrison Gas Plant Site
Harrison, New Jersey

Exploration Identification	Location	Estimated Depth (Feet, bgs)	Rationale
<u>Geonor Vane</u> <u>Shear Test</u>			
GV-1 through GV-3	Passaic River sediments outboard of the existing bulkhead, adjacent to CP-4, CP-6, and CP-9.	18	Measure the shear strength of the sediments on the outboard of the existing bulkhead. This information will be used to assess design of sheet piles.

850000076

Table 2
Sampling Program Summary
Harrison Gas Plant Site
Harrison, New Jersey

MGP Sampling Program	Location	Depth (feet, bgs)	Number of Samples	TCL VOC	TCL SVOC	TAL Inorganics	TPH	Hazardous Waste Characteristics*	NJDEP Deliverable
<u>Test Pits</u>									
TP-1	Former tidal channel area	6-10	1	1	1	1	1	1	CLP-Reduced
TP-2 through TP-5	Along the shoreline behind bulkhead structures	6-10	4	4	4	4	4	2	CLP-Reduced
<u>Soil Borings</u>									
B-1 through B-3	Along the shoreline behind the bulkhead structures	30-60	9	9	9	9	9	2	CLP-Reduced
B-4	Northwest corner of property	30-60	1	1	1	1	1	1	CLP-Reduced
<u>Groundwater</u>									
MW-1 through MW-5	To be determined in the field	Shallow: 5-15 Deep: 15-20	5	5	5	5	5		CLP-Reduced

Notes:

VOC	Volatile Organic Compounds	TCL	Target Compound List
SVOC	Semivolatile Organic Compounds	CLP	Contract Laboratory Program
TPH	Total Petroleum Hydrocarbons	Inorganics	Metals and Cyanide
TAL	Target Analyte List		

850000077

Table 2
Sampling Program Summary
Harrison Gas Plant Site
Harrison, New Jersey

1. Field (sample) blanks samples will be collected and submitted at a rate of one field blank sample for every 10 soil samples submitted for analyses (maximum of 1 blank per day).
2. Laboratory analyses will be conducted according to the USEPA-CLP-SOW 3/90 Methodology, USEPA Methods for Chemical Analyses for Water and Wastes, Revised March 1993 (USEPA EPA-600/4-74-020) and USEPA SW-846.
3. All soil samples will be preserved by cooling to 4°C.
4. Sample holding times and container requirements are as follows:

ANALYSES	SOIL CONTAINER REQUIREMENTS (SOIL/WATER)	HOLDING TIMES
VOCs	2 oz. Wide Mouth Glass/2-40 ml glass	10 days
SVOCs	4 oz. Wide Mouth Glass/2-1 L glass	10 days to extraction, 40 days after extraction
Inorganics	4 oz. Wide Mouth Glass/1-1 L plastic	6 months of all inorganics except mercury (26 days) and cyanide (14 days)
TPH	4 oz. Wide Mouth Glass/1-1 L glass	28 days

Hazardous waste characterization sample analyses include: Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP Inorganics, Reactivity (i.e., reactive sulfide and reactive cyanide), Total PCBs, TPH, Pesticides and Herbicides, corrositivity and ignitability.

850000078

APPENDIX A

SEWER CONNECTION PERMIT

**HARRISON GAS PLANT SITE
HARRISON, NEW JERSEY**

DONALD TUCKER
CHAIRMAN

RAYMOND LUCHKO
VICE CHAIRMAN

ROBERT M. BURKE, JR.
THOMAS J. CIFELLI
JAMES KRONE
FRANK ORECHIO
COMMISSIONERS

**Passaic Valley
Sewerage Commissioners**

600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800
Fax: (201) 344-2951

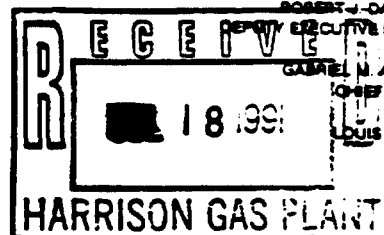
July 17, 1991

CARMINE T. PERRAPATO
EXECUTIVE DIRECTOR

ROBERT J. DAVENPORT
DEPUTY EXECUTIVE DIRECTOR

GABRIEL M. AMBROSIO
CHIEF COUNSEL

LOUIS LANZILLO
CLERK



Public Service Electric & Gas Company
Harrison Gas Plant
Fourth Street & Passaic River
Harrison, New Jersey 07029

Attn: George Stubblebine

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P 836 457 770

RE: SEWER CONNECTION PERMIT

Dear Mr. Stubblebine:

Enclosed you will find your Sewer Connection Permit for discharge into the Passaic Valley Sewerage Commissioners system.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

Frank P. D'Ascensio
Frank P. D'Ascensio,
Manager of Industrial & Pollution Control

FPD/mc

Enclosure

cc: Town of Harrison

850000080

PASSAIC VALLEY SEWERAGE COMMISSIONERS

SEWER CONNECTION PERMIT

PERMIT # 13403712

(Please use the Permit Number on any correspondence with PVSC)
In compliance with the provisions of the Federal Water Pollution Control Act, its amendments, the Clean Water Act and the Rules and Regulations of the Passaic Valley Sewerage Commissioners:

Public Service Electric & Gas CompanyHarrison Gas Plant(herein, after referred to as the Permittee)

is authorized to discharge from a facility located at

4th Street & Passaic RiverHarrison, New Jersey 07029

to the Passaic Valley Sewerage Commissioners Treatment Works in accordance with discharge limitations, monitoring requirements and other conditions set forth herein.

EFFECTIVE DATE 07/14/91EXPIRATION DATE 07/14/96

PASSAIC VALLEY SEWERAGE COMMISSIONERS


EXECUTIVE DIRECTOR

850000081

g. EXCESSIVE DISCHARGE RATE

Industrial wastes discharged in a slug of such volume or strength so as to cause a treatment process upset and subsequent loss of treatment efficiency.

h. HEAT

(1) any discharge in excess of 150⁰ F (65⁰C)

(2) Heat in amounts which would inhibit biological activity in the PVSC treatment works resulting in a treatment process upset and subsequent loss of treatment efficiency, but in no case shall heat be introduced into the PVSC treatment works in such quantities that the temperature of the influent waters at the treatment plant exceed 40⁰C (104⁰F).

i. UNPOLLUTED WATERS

Any unpolluted water including, but not limited to, cooling water or uncontaminated storm water, which will increase the hydraulic load on the treatment system, except as approved by PVSC.

j. WATER

Any water added for the purpose of diluting wastes which would otherwise exceed applicable maximum concentration limits.

2. No person shall discharge or convey, or permit to be discharged or conveyed, to the treatment works any wastes containing pollutants of such character or quantity that will:
 - a. Not be susceptible to treatment or interfere with the process or efficiency of the treatment system.
 - b. Violate pretreatment standards. As pretreatment standards for toxic or other hazardous pollutants are promulgated by USEPA for a given industrial category, all industrial users within that category must immediately conform to the USEPA timetable as well as any numeric limitations imposed by USEPA. In addition, an industrial user shall comply with any more stringent standards as determined by PVSC or other agency.
 - c. Cause the PVSC treatment plant to violate its NJPDES permit, applicable receiving water standards, permit regulating sludge which is produced during treatment or any other permit issued to PVSC.

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (07/14/91) and lasting through (07/14/96) the permittee is authorized to discharge from outlet(s) number(ed) (13403711-28006-0131). Such discharge shall be monitored by the permittee as specified below. Volume to be determined from flowmeter readings.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
			MEASUREMENT FREQUENCY	SAMPLE TYPE	REPORTING PERIOD
BOD (0310)	XXXXXX	XXXXXX	Monthly	24 hr. comp.	Monthly
TSS (0530)	XXXXXX	XXXXXX	Monthly	24 hr. comp.	Monthly
LEL *	XXXXXX	XXXXXX	Continuous	Recorder	**
Volume	XXXXXX	XXXXXX	XXXXXXX	XXXXXX	Monthly
* Regulated as defined in Appendix B, Pretreatment Limitation #2 of PVSC Rules and Regulations.					
** Permittee to store pH Recorder Charts and have available for review by PVSC personnel on demand.					

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (07/14/91) and lasting through (07/14/96) the permittee is authorized to discharge from outlet(s) number(ed) (13403712-28006-0131). Such discharge shall be monitored by the permittee as specified below. Volume to be determined from water consumption data. Domestic waste only to be discharged from this outlet.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
			MEASUREMENT FREQUENCY	SAMPLE TYPE	REPORTING PERIOD
BOD (0310)	XXXXXX	XXXXXXXX	N/A *	N/A	XXXXXXXX
TSS (0530)	XXXXXX	XXXXXXXX	N/A *	N/A	XXXXXXXXXX
Volume	XXXXXX	XXXXXXXX	XXXXXXXXXX	XXXXXXX	Monthly
* Concentration for User Charge to be determined from Residential Strength Standards.					

2. In addition to the monitoring required in Section C.1. the Permittee is required to meet the following schedule of compliance:

- A. Analysis of wastewater parameters shall be performed by a laboratory that has been certified by the State of New Jersey.
- B. When Final Pretreatment Standards are promulgated permittee shall submit a Baseline Monitoring Report to PVSC in accordance with 40 CFR 403.12 and any subsequent revisions (copy attached).
- C. N.J.P.D.E.S.

Direct Discharge Outlet Monitored by N.J.D.E.P.- Permit #NJ0000566,
Passaic River.

The volume of each sample shall be proportional to the discharge flow rate unless specifically modified by PVSC. For a 24 hour continuous discharge, a minimum of 24 individual samples shall be collected at equal intervals and at least once per hour. For continuous discharges of less than 12 hours, individual samples shall be taken at least once every 30 minutes. For discharges which are not continuous, individual samples shall be taken such that they will be representative of plant waste.

- g. "Grab" - an individual sample collected in less than 15 minutes.
- h. "Quarterly" - every three (3) months.
- i. "N/A" - not applicable.

E. MANAGEMENT REQUIREMENTS

1. CHANGE IN DISCHARGES

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or modification which will result in new, different, or increased discharges of pollutants must be reported by submission of a new PVSC Sewer Connection Application or, if such changes will not violate the effluent limitations specified in this permit, by notices to PVSC of such changes. Following such notices, the permit may be modified to specify and limit any pollutants not previously limited.

2. NONCOMPLIANCE NOTIFICATION

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall notify PVSC within 24 hours of the occurrence.

F. MANAGEMENT RESPONSIBILITIES**1. RIGHT OF ENTRY**

The permittee shall allow the authorized representatives of PVSC, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring methods required in this permit; and to sample any discharge of pollutants.

2. TRANSFER OF OWNERSHIP OR CONTROL

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall, in writing, notify the succeeding owner or controller of the existence of this permit, and the need to apply for a new permit, a copy of which shall be forwarded to PVSC.

3. PERMIT MODIFICATION

After notice and opportunity for a hearing, this permit may be modified, or revoked in whole or in part during its terms for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

[403.11(b) introductory text amended by 3 FR 40610, October 17, 1968]

(1) Issue a public notice of request for approval of the Submission:

(i) This public notice shall be circulated in a manner designed to inform interested and potentially interested persons of the Submission. Procedures for the circulation of public notice shall include:

(A) Mailing notices of the request for approval of the Submission to designated planning agencies, Federal and State fish, shellfish, and wildlife resource agencies; and to any other person or group who has requested individual notice, including those on appropriate mailing lists; and

(B) Publication of a notice of request for approval of the Submission in the largest daily newspaper within the jurisdiction(s) served by the POTW.

(ii) The public notice shall provide a period of not less than 30 days following the date of the public notice during which time interested persons may submit their written views on the Submission.

(iii) All written comments submitted during the 30 day comment period shall be retained by the Approval Authority and considered in the decision on whether or not to approve the Submission. The period for comment may be extended at the discretion of the Approval Authority; and

(2) Provide an opportunity for the applicant, any affected State, any interested State or Federal agency, person or group of persons to request a public hearing with respect to the Submission.

(i) This request for public hearing shall be filed within the 30 day (or extended) comment period described in paragraph (b)(1)(ii) of this section and shall indicate the interest of the person filing such request and the reasons why a hearing is warranted.

(ii) The Approval Authority shall hold a hearing if the POTW so requests. In addition, a hearing will be held if there is a significant public interest in issues relating to whether or not the Submission should be approved. Instances of doubt should be resolved in favor of holding the hearing.

(iii) Public notice of a hearing to consider a Submission and sufficient to inform interested parties of the nature of the hearing and the right to participate shall be published in the

same newspaper as the notice of the original request for approval of the Submission under paragraph (b)(1)(i)(B) of this section. In addition, notice of the hearing shall be sent to those persons requesting individual notice.

(c) *Approval authority decision.* At the end of the 30 day (or extended) comment period and within the 90 day (or extended) period provided for in paragraph (a) of this section, the Approval Authority shall approve or deny the Submission based upon the evaluation in paragraph (a)(3) of this section and taking into consideration comments submitted during the comment period and the record of the public hearing, if held. Where the Approval Authority makes a determination to deny the request, the Approval Authority shall so notify the POTW and each person who has requested individual notice. This notification shall include suggested modifications and the Approval Authority may allow the requestor additional time to bring the Submission into compliance with applicable requirements.

(d) *EPA objection to Director's decision.* No POTW pretreatment program or authorization to grant removal allowances shall be approved by the Director if following the 30 day (or extended) evaluation period provided for in paragraph (b)(1)(i) of this section and any hearing held pursuant to paragraph (b)(1)(ii) of this section the Regional Administrator sets forth in writing objections to the approval of such Submission and the reasons for such objections. A copy of the Regional Administrator's objections shall be provided to the applicant, and each person who has requested individual notice. The Regional Administrator shall provide an opportunity for written comments and may convene a public hearing on his or her objections. Unless retracted, the Regional Administrator's objections shall constitute a final ruling to deny approval of a POTW pretreatment program or authorization to grant removal allowances 90 days after the date the objections are issued.

(e) *Notice of decision.* The Approval Authority shall notify those persons who submitted comments and participated in the public hearing, if held, of the approval or disapproval of the Submission. In addition, the Approval Authority shall cause to be published a notice of approval or disapproval in

the same newspapers as the original notice of request for approval of the Submission was published. The Approval Authority shall identify in any notice of POTW Pretreatment Program approval any authorization to modify categorical Pretreatment Standards which the POTW may make, in accordance with § 403.7, for removal of pollutants subject to Pretreatment Standards.

(f) *Public access to submission.* The Approval Authority shall ensure that the Submission and any comments upon such Submission are available to the public for inspection and copying.

§ 403.12 Reporting requirements for POTW's and industrial users.

(a) *Definition.* The term "Control Authority" as it is used in this section refers to: (1) The POTW if the POTW's Submission for its pretreatment program (§ 403.3(a)(1)) has been approved in accordance with the requirements of § 403.11; or (2) the Approval Authority if the Submission has not been approved.

(b) *Reporting requirements for industrial users upon effective date of categorical pretreatment standard—baseline report.* Within 180 days after the effective date of a categorical Pretreatment Standard, or 180 days after the final administrative decision made upon a category determination submission under § 403.8(a)(4), whichever is later, existing Industrial Users subject to such categorical Pretreatment Standards and currently discharging to or scheduled to discharge to a POTW shall be required to submit to the Control Authority a report which contains the information listed in paragraphs (b)(1)-(7) of this section. Where reports containing this information already have been submitted to the Director or Regional Administrator in compliance with the requirement of 40 CFR 122.140(b) (1977), the Industrial User will not be required to submit this information again. At least 90 days prior to commencement of discharge, New Sources, and sources that become Industrial Users subsequent to the promulgation of an applicable categorical Standard, shall be required to submit to the Control Authority a report which contains the information listed in paragraphs (b)(1)-(5) of this section. New sources shall also be required to include in this report information on the method of pretreatment the source intends to use to meet

[Sec. 403.12(b)]

components, commencing construction, completing construction, etc.).

(2) No increment referred to in paragraph (e)(1) of this section shall exceed 9 months.

(3) Not later than 14 days following each date in the schedule and the final date for compliance, the Industrial User shall submit a progress report to the Control Authority including, at a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the Industrial User to return the construction to the schedule established. In no event shall more than 9 months elapse between such progress reports to the Control Authority.

(d) *Report on compliance with categorical pretreatment standard deadline.* Within 90 days following the date for final compliance with applicable categorical Pretreatment Standards or in the case of a New Source following commencement of the introduction of wastewater into the POTW, any Industrial User subject to Pretreatment Standards and Requirements shall submit to the Control Authority a report containing the information described in paragraphs (b) (4)-(6) of this section. For Industrial Users subject to equivalent mass or concentration limits established by the Control Authority in accordance with the procedures in § 403.6(c), this report shall contain a reasonable measure of the User's long term production rate. For all other Industrial Users subject to categorical Pretreatment Standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the User's actual production during the appropriate sampling period.

[403.12(d) revised by 53 FR 40610, October 17, 1988]

(e) *Periodic reports on continued compliance.* (1) Any Industrial User subject to a categorical Pretreatment Standard, after the compliance date of such Pretreatment Standard, or, in the case of a New Source, after commencement of the discharge into the POTW, shall submit to the Control Authority during the months of June and December, unless required more frequently in the Pretreatment Standard or by the Control Authority or the

Approval Authority, a report indicating the nature and concentration of pollutants in the effluent which are limited by such categorical Pretreatment Standards. In addition, this report shall include a record of measured or estimated average and maximum daily flows for the reporting period for the Discharge reported in paragraph (b)(4) of this section except that the Control Authority may require more detailed reporting of flows. At the discretion of the Control Authority and in consideration of such factors as local high or low flow rates, holidays, budget cycles, etc., the Control Authority may agree to alter the months during which the above reports are to be submitted.

(2) Where the Control Authority has imposed mass limitations on Industrial Users as provided for by § 403.6(d), the report required by paragraph (e)(1) of this section shall indicate the mass of pollutants regulated by Pretreatment Standards in the Discharge from the Industrial User.

[403.12(e)(3) added, (f)-(j) added, former (b)-(l) redesignated as (k)-(o) by 53 FR 40610, October 17, 1988]

(3) For Industrial Users subject to equivalent mass or concentration limits established by the Control Authority in accordance with the procedures in § 403.6(c), the report required by paragraph (e)(1) shall contain a reasonable measure of the User's long term production rate. For all other Industrial Users subject to categorical Pretreatment Standards expressed only in terms of allowable pollutant discharge per unit of production (or other measure of operation), the report required by paragraph (e)(1) shall include the User's actual average production rate for the reporting period.

(f) *Notice of potential problems, including slug loading.* All categorical and non-categorical Industrial Users shall notify the POTW immediately of all discharges that could cause problems to the POTW, including any slug loadings, as defined by § 403.5(b), by the Industrial User.

(g) *Monitoring and analysis to demonstrate continued compliance.* (1) The reports required in paragraphs (b), (d), and (e) of this section shall contain the results of sampling and analysis of the Discharge, including the flow and the nature and concentration, or production and mass where requested by the Control Authority, of

pollutants contained therein which are limited by the applicable Pretreatment Standards. This sampling and analysis may be performed by the Control Authority in lieu of the Industrial User. Where the POTW performs the required sampling and analysis in lieu of the Industrial User, the User will not be required to submit the compliance certification required under §§ 403.12(b) (6) and 403.12(d). In addition, where the POTW itself collects all the information required for the report, including flow data, the Industrial User will not be required to submit the report.

(3) If sampling performed by an Industrial User indicates a violation, the user shall notify the Control Authority within 24 hours of becoming aware of the violation. The User shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Control Authority within 30 days after becoming aware of the violation, except the Industrial User is not required to resample if:

(1) The Control Authority performs sampling at the Industrial User at a frequency of at least once per month, or

(2) The Control Authority performs sampling at the User between the time when the User performs its initial sampling and the time when the User receives the results of this sampling.

(3) The reports required in paragraph (e) of this section shall be based upon data obtained through appropriate sampling and analysis performed during the period covered by the report, which data is representative of conditions occurring during the reporting period. The Control Authority shall require that frequency of monitoring necessary to assess and assure compliance by Industrial Users with applicable Pretreatment Standards and Requirements.

(4) All analyses shall be performed in accordance with procedures established by the Administrator pursuant to section 304(h) of the Act and contained in 40 CFR Part 136 and amendments thereto or with any other test procedures approved by the Administrator. (Sec. §§ 136.4 and 136.5.) Sampling shall be performed in accordance with the techniques approved by the Administrator. Where 40 CFR Part 136 does not include sampling or analytical techniques for the pollutants in question, or where the Administrator determines that the Part 136 sampling and analytical techniques are inappropriate

[Sec. 403.12(g)(4)]

(3) By a duly authorized representative of the individual designated in paragraph (IX1) or (IX2) of this section if:

(i) The authorization is made in writing by the individual described in paragraph (IX1) or (IX2);

(ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

(iii) the written authorization is submitted to the Control Authority.

(4) If an authorization under paragraph (1)(3) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (1)(3) of this section must be submitted to the Control Authority prior to or together with any reports to be signed by an authorized representative.

(m) **Signatory requirements for POTW reports.** Reports submitted to the Approval Authority by the POTW in accordance with paragraph (h) of this section must be signed by a principal executive officer, ranking elected official or other duly authorized employee if such employee is responsible for overall operation of the POTW.

(n) **Provisions Governing Fraud and False Statements:** The reports and other documents required to be submitted or maintained under this section shall be subject to:

(1) The provisions of 18 U.S.C. section 1001 relating to fraud and false statements;

(2) The provisions of sections 303(c)(4) of the Act, as amended, governing false statements, representation or certification; and

(3) The provisions of section 303(c)(6) regarding responsible corporate officers. [403.12(a) amended by 53 FR 40610, October 17, 1988; revised by 55 FR 30128, July 24, 1990]

(o) **Record-keeping requirements.** (1) Any Industrial User and POTW subject to the reporting requirements established in this section shall maintain

records of all information resulting from any monitoring activities required by this section. Such records shall include for all samples:

(i) The date, exact place, method, and time of sampling and the names of the person or persons taking the samples;

(ii) The dates analyses were performed;

(iii) Who performed the analyses;

(iv) The analytical techniques/methods used; and

(v) The results of such analyses.

(2) Any Industrial User or POTW subject to the reporting requirements established in this section shall be required to retain for a minimum of 3 years any records of monitoring activities and results (whether or not such monitoring activities are required by this section) and shall make such records available for inspection and copying by the Director and the Regional Administrator (and POTW in the case of an Industrial User). This period of retention shall be extended during the course of any unresolved litigation regarding the Industrial User or POTW or when requested by the Director or the Regional Administrator.

(3) Any POTW to which reports are submitted by an Industrial User pursuant to paragraphs (b), (d), (e) and (h) of this section shall retain such reports for a minimum of 3 years and shall make such reports available for inspection and copying by the Director and the Regional Administrator. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Industrial User or the operation of the POTW Pretreatment Program or when requested by the Director or the Regional Administrator.

[403.12(o)(3) amended by 53 FR 40610, October 17, 1988]

[403.12(p) added by 55 FR 30128, July 24, 1990]

(p)(1) The Industrial User shall notify the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR part 261, the EPA hazardous waste

number, and the type of discharge (continuous, batch, or other). If the Industrial User discharges more than 100 kilograms of such waste per calendar month to the POTW, the notification shall also contain the following information to the extent such information is known and readily available to the Industrial User: An identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastewater discharged during that calendar month, and an estimation of the mass of constituents in the wastewater expected to be discharged during the following twelve months. All notifications must take place within 180 days of the effective date of this rule. Industrial users who commence discharging after the effective date of this rule shall provide the notification no later than 180 days after the discharge of the listed or characteristic hazardous waste. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed discharges must be submitted under 40 CFR 403.12 (j). The notification requirement in this section does not apply to pollutants already reported under the self-monitoring requirements of 40 CFR 403.12 (b), (d), and (e).

(2) Dischargers are exempt from the requirements of paragraph (p)(1) of this section during a calendar month in which they discharge no more than fifteen kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen kilograms of non-acute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification.

Subsequent months during which the Industrial User discharges more than such quantities of any hazardous waste do not require additional notification.

(3) In the case of any new regulations under section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the Industrial User must notify the POTW, the EPA Regional Waste Management



Harrison Gas Plant Frank E. Rodgers Blvd. Harrison, N.J. 07029 Phone 201/430-7000

January 11, 1991

Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, New Jersey 07105

ATTENTION: Carmine Perrapato

SEWER CONNECTION PERMIT NO. 13403712

Dear Mr. Perrapato:

Attached is the renewal permit application for the sewer connection at PSE&G Harrison Gas Plant. Also enclosed are the laboratory analytical reports requested in your instructions.

The drawing (1) and diagrams (2) give the necessary information requested in the instructions. To the best of our knowledge these prints are what currently exists in operation at the Harrison Plant. A new drawing is being made to combine existing sanitary sewer, process sewer, and storm drain piping currently in service. These changes were brought about due to the retirement of a large portion of the plants gas making operation.

If you have any questions referring to the renewal application, you may call me at (201) 430-8538 or Raymond Ciupinski at (201) 430-8541.

A handwritten signature in cursive script, appearing to read "G.W. Stubblebine".

G.W. Stubblebine
Manager-
Harrison Gas and
Linden SNG Plants

RCC:emm
ATTACHMENTS

SEWERCON.RCC 001.M

DONALD TUCKER
CHAIRMAN

RAYMOND LUCHKO
VICE CHAIRMAN

ROBERT M. BURKE, JR.
THOMAS J. GRIELLI
CHARLES A. LAGOS
FRANK ORECHIO
COMMISSIONERS

**Passaic Valley
Sewerage Commissioners**

600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800
Fax: (201) 344-2951

CARMINE T. PERRAPATO
EXECUTIVE DIRECTOR

ROBERT J. DAVENPORT
DEPUTY EXECUTIVE DIRECTOR

GABRIEL M. AMEROSIO
CHIEF COUNSEL

NORMAN E. DARMETATTER
CLERK

October 5, 1990

PSE&G Company
Harrison Gas Plant
Harrison, NJ 07029

CERTIFIED MAIL
RETURN RECEIPT REQUEST

ATT: George Stubblebine

RE: SEWER CONNECTION PERMIT NO. 13403712

Dear Mr. Stubblebine:

The above Sewer Connection Permit will expire on 07/14/91. In accordance with the Passaic Valley Sewerage Commissioners Rules and Regulations and your municipal ordinance you are required to renew your Permit in order to continue to discharge into the PVSC sewerage system. These Regulations also require that you submit the renewal Application six months prior to the expiration date of the Permit. Extensive revisions have been made to the Application form which is enclosed.

You will note that the emphasis has shifted to include much more information on Pretreatment. Additional analytical testing is required and, to avoid unnecessary expense, be sure to read and follow the instructions, which accompany the Application, very carefully. We realize that PVSC has distributed several forms and questionnaires during the past few months and we appreciate the fact that nearly all users have responded in a cooperative way.

For your information, PVSC is actively pursuing innovative solutions to the problem of pollution and some of the surveys and questionnaires will help us in this effort. We hope that the extra effort now will produce a cleaner environment in the future, and at less cost to the individual users.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS


Carmine T. Perrapato
Executive Director

CTP/mc

Enclosure

850000093

INSTRUCTIONS FOR COMPLETING SEWER CONNECTION APPLICATION

Users who receive an application must return the completed application within required time frame in cover letter, to the Passaic Valley Sewerage Commissioners, 600 Wilson Avenue, Newark, NJ 07105 Attention of the Industrial Department. New applicants will be advised if a Sewer Connection Permit is required upon the completion of their application evaluation.

Questions concerning the completion of the application may be answered by contacting the Industrial Department at 817-5715. Answer all questions, if one does not apply write in N/A or None.

1. Be certain to indicate if Company is incorporated.
2. To be filled in only for Permit renewals.
4. To be filled in only if mailing address is different from the location; otherwise write "Same".
3. This is the person PVSC will contact to answer questions and provide information as necessary. Fill in address only if it is different from the Facility Location.
6. Use annual average numbers.
7. Self explanatory. Entire property must be listed. If property lies in more than one municipality, indicate which ones lies within the respected municipalities.
8. Self explanatory. Be certain to list the total amount of square feet rented.
9. Self explanatory. If none, so state.
10. Circle Y if well water or river water is consumed regardless of how it is used.
11. Self explanatory. Be certain to list all account numbers.
12. Report consumption for most recent 12 months; i.e., from Mo. 3/1 Yr. 83 through Mo. 2/28 Yr. 84. Total up the quarterly volumes from all sources. Be certain to convert to gallons. Most water utilities report consumption in hundreds of cubic feet (100 cu.ft.) If this is the case, it will be necessary to add two zeros to the figure in order to convert it to cubic feet, then multiply it by 7.48 to convert the figure to gallons. Check the unit of measure on the meters used to measure river or well water volumes, convert them also if necessary. Please note, an asterisk means the figure is estimated.
13. Total amount of water received must equal the total amount of water used and disposed of. Fill in the quantity of each that applies. Be certain to use an asterisk for estimated figures.

25. Identify outlets as in item 21. Internal building sewer lines need not be shown, but all external lines must be shown.
26. An applicant who is regulated by a Federal Category must analyze for those parameters listed in accordance with the regulation. Also, all other parameters listed in Section E must be analyzed in accordance with the instructions. The sample that is analyzed should be a composite collected over the operating day and should be representative of the normal discharge. Some parameters require grab samples in place of composite samples. Samples must be properly preserved as required. All analyses must be conducted in accordance with the 1974 EPA Standard Methods Manual, the Fourteenth Edition of Standards Methods or the 1975 ASTM, as outlined in 40 CFR Part 136 12/1/76 and its revisions. In particular, analyses for Heavy Metals must be conducted by Atomic Absorption. Those analyses for Toxic Organics or Pesticides must be conducted by Gas Chromatography. All analyses must be conducted by a Lab certified by NJDEP to perform the analyses reported. Results must be submitted on Lab certified forms in addition to being entered in Section E.

Renewal applicants do not have to analyze for those parameters currently being monitored and periodically reported. Results from samples taken during the past six months are acceptable for submittal to PVSC provided results are so noted.

The results of the analyses must be reported to the decimal points indicated. The parameters marked with (1) must be reported to the nearest tenth; ie., 1.6 mg/L. The parameters marked with an asterisk (*) need only be analyzed for if reasonably expected to be present in the discharge, unless otherwise exempted. All other parameters must be analyzed. Concentration values are to be reported in mg/l unless otherwise specified. Identify the outlets as in Item 21, also identify name and employer of person collecting and analyzing the samples. If submitting an analysis for more than 1 outlet use separate sheets.

27. Self explanatory. Identify employer also.
31. Applicant is required only to check the box that best describes the potential for The Priority Pollutants listed on Tables 1, 2, & 3 to be present in his discharge.
32. Identify EPA industrial categories that apply. Also give alphabetical subpart listings and names that identify specific subparts.
33. If more than one compliance date applies, list separately.
35. If no schedule is required answer N/A.

Revised 1/87
Revised 7/90

PASSAIC VALLEY SEWERAGE COMMISSIONERS
APPLICATION FOR A SEWER CONNECTION PERMIT

SECTION A

1. Company Name: PUBLIC SERVICE ELECTRIC AND GAS COMPANY, INC.
2. Permit number if applicable, 13403712
3. Location: Harrison Gas Plant, Frank E. Rodgers Blvd.
Harrison, N.J. Zip Code: 07029
4. Mailing Address: Same
Zip Code: _____
5. Person to contact concerning information provided in this application:
Name of Contact Official: George W. Stubblebine
Title: Manager-Harrison Gas Plant Phone No. (201) 430-8538
Address: Same Zip Code _____
6. Number of Employees - Full Time: 62 Part Time: 15
Number of Work Days Per Year: 365
Number of Shifts Per Day: 3
7. If property is owned indicate block and lot numbers:
Block No. B-78 Lot No. 1,2 et. all
Assessed Value: 22,896,400 19 90
8. If property is rented indicate name and address of owner:

Total square feet rented: _____
9. List NJPDES Permit number if applicable, NJ 0000566
name of receiving body of water entered Passaic River

SECTION B (CONTINUED)

14. Process wastewater which is discharged as above is metered as follows:

to the Separate Sanitary Sewer

☒ Y - ☐ N

to the Combined Sewer

Y - ☒ N

to a storm sewer

Y - ☒ N

river or ditch

Y - ☒ N

15. Waste Hauler Information: List all firms and/or independent contractors used to remove process waste or sludge from this facility.

Contractor	Address	icc#	Waste type handled
NONE			

SECTION C

OPERATIONAL CHARACTERISTICS

16. Discharge of Industrial Waste is continuous _____

or intermittent X each operating day.

As separator float switch requires. 1 at approximately day.

If the discharge is intermittent, it occurs between the following hours:

17. Brief description of Manufacturing or other activity performed: _____

Natural gas storage, metering and regulating operations, and
operation of a liquid propane/air plant.

List SIC CODE #: 4925

18. Principal Raw Materials used: Propane, butane, kerosene, No. 6 fuel oil,
water, natural gas.

19. Principal Products or Services: Various supplemental gases are prepared and
delivered to the PSE&G gas distribution system through piping.

SECTION D (CONTINUED)

23. Volume Information;

<u>Outlet</u>	<u>Daily Flow (Gallons)</u>	<u>Metered (Y - N)</u>	<u>Type</u>	<u>Date</u>
13403712	24,000*	Y	Stevens Meter flume type (no reset)	11/90

24. Frequency of calibration of each flow meter: All incoming water meters maintained by water companies. Plant effluent waste water meter calibrated yearly by plant personnel. (Stevens Flume Meter)

25. Attach a plot plan of the property showing:

- (a) all existing or proposed sewer and drain lines (including outlets to a storm sewer, river or ditch);
- (b) sample point(s); Monitoring or Pretreatment Equipment; Incoming meter(s); Well meter(s); Internal meter(s); Flowmeter(s).
- (c) details of the connection (s) to the municipal (or PVSC) sewer, including the distance and direction of each connection from the nearest street intersection.

* ESTIMATED

SECTION E (CONTINUED)

Samples collected by: PSE&G Research and Testing Laboratory

Date: 12/13/90

Samples analyzed by: PSE&G Research and Testing Laboratory

Date: 12/15-20/90

Products being manufactured when sample was collected: None, Plant in standby ready mode.

27. Who performs the analyses of the samples for User Charge? PSE&G Linden SNG Plant Lab, Linden, NJ 07036

28. Is the Laboratory certified by NJDEP to conduct all the analyses? Y - N Y

29. Who performs the analyses of the samples for the Pretreatment Parameters?
N/A

(If monitoring has not commenced for Pretreatment, indicate Laboratory you plan to use, unknown, so state): PSE&G Linden SNG Lab, Linden, NJ 07036
or PSE&G Research and Testing Lab, Maplewood, NJ 07040

30. Is The Laboratory certified by NJDEP to conduct all the required Pretreatment analyses?
Y - N N/A

31. Based upon knowledge of materials and processes used at this facility check the appropriate that best describes the potential that a Priority Pollutant, listed on Tables 1, 2, & 3 is present in your discharge.

CERTIFICATION*:

The information contained in this application is familiar to me and, to the best of my knowledge and belief, such information is true, complete, and accurate.

If the applicant is a corporation, a corporate resolution is attached granting me the authority sign the application on behalf of the corporation.

Name of signing official: Curt W. Grevenitz
PRINT

TITLE: Vice President - Gas Operations

1/11/91
DATE


SIGNATURE

***APPLICATION MUST BE SIGNED BY ONE OF THE FOLLOWING:**

- a. Principal Officer of Corporation
- b. President or Owner of Company
- c. General Partner if a Partnership
- d. Plant Manager or Authorized Representative

TABLE 1 EPA PRIORITY POLLUTANTS (CONTINUED)

CHECK APPROPRIATE BOX

NAME	A	B	C	D		A	B	C
bis(2-ethylhexyl) phthalate				X	endrin			
butylbenzylphthalate				X	endrin aldehyde			
di-n-butylphthalate				X	heptachlor		X	
di-n-octylphthalate				X	heptachlor (epoxide)			
diethylphthalate				X	BHC Alpha			
dimethylphthalate		X		X	BHC Beta			
benzo(a)anthracene		X			BHC Gamma			
benzo(a)pyrene				X	BHC Delta			
3,4 benzofluoranthene				X	PCB-1242		X	
benzo(k)fluoranthene		X			PCB-1254		X	
chrysene		X			PCB-1271		X	
acenaphthylene		X			PCB-1232		X	
anthracene				X	PCB-1248		X	
benzo(ghi)perylene		X			PCB-1260		X	
fluorene		X			PCB-1016		X	
phenanthrene				X	toxaphene			
dibenzo(a,h)anthracene				X	antimony (total)		X	
indeno(1,2,3-c,d)pyrene				X	arsenic (total)		X	
pyrene		X			asbestos (fibrous)		X	
tetrachloroethylene				X	beryllium (total)		X	
toluene		X			cadmium (total)		X	
trichloroethylene				X	chromium (total)		X	
vinyl chloride				X	copper (total)		X	
aldrin				X	cyanide (total)			
dieldrin				X	lead (total)			X
chlordane				X	mercury (total)			X
4,4 DDT				X	nickel (total)		X	
4,4 DDE				X	selenium (total)			X
4,4 DDD				X	silver (total)			
endosulfan I				X	thallium (total)			
endosulfan II				X	zinc (total)		X	
endosulfan sulfate				X	2,3,7,8, tetrachlorodibenzo		X	
					p-dioxin		X	

- A. KNOWN TO BE PRESENT**
B. SUSPECTED TO BE PRESENT
C. KNOWN TO BE ABSENT
D. SUSPECTED TO BE ABSENT

TABLE 3 EPA HAZARDOUS SUBSTANCES

CHECK APPROPRIATE BOX

NAME	A	B	C	D		A	B	C	D
acetaldehyde				X	isopropanolamine				X
allyl alcohol				X	kelthane				X
allyl chloride				X	kepone				X
amyl acetate				X	malathion				X
aniline				X	mercaptodimethur				X
benzonitrile				X	methoxychlor				X
benzyl chloride				X	methyl mercaptan				X
butyl acetate				X	methyl methacrylate				X
butylamine				X	methyl parathion				X
captan				X	mevinphos				X
carbaryl				X	mexacarbate				X
carbofuran				X	monoethyl amine				X
carbon disulfide				X	monomethyl amine				X
chlorpyrifos				X	naled				X
coumaphos				X	naphthenic acid				X
cresol				X	nitrotoluene				X
crotonaldehyde				X	parathion				X
cyclohexane				X	phenolsulfonate				X
2,4-D (2,4-dichlorophenoxy				X	phosgene				X
acetic acid)				X	propargite				X
diazinon				X	propylene oxide				X
dicamba				X	pyrethrins				X
dichlobenil				X	quinoline				X
dichlone				X	resorcinol				X
2,2-dichloropropionic acid				X	strontium				X
dichlorvos				X	strychnine				X
diethyl amine				X	stryrene				X
dimethyl amine				X	2,4,5-T (2,4,5-trichloro-				X
					phenoxy acetic acid)				X
dinitrobenzene				X	TDE (tetrachloro-				X
					diphenylethane)				X
diquat				X	2,4,5-TP 2-(2,4,5-				X
					trichlorophenoxy)				X
					propanoic acid				X
disulfoton				X	trichlorofon				X
diuron				X	triethylamine				X
epichlorohydrin				X	trimethylamine				X

- A. KNOWN TO BE PRESENT**
B. SUSPECTED TO BE PRESENT
C. KNOWN TO BE ABSENT
D. SUSPECTED TO BE ABSENT

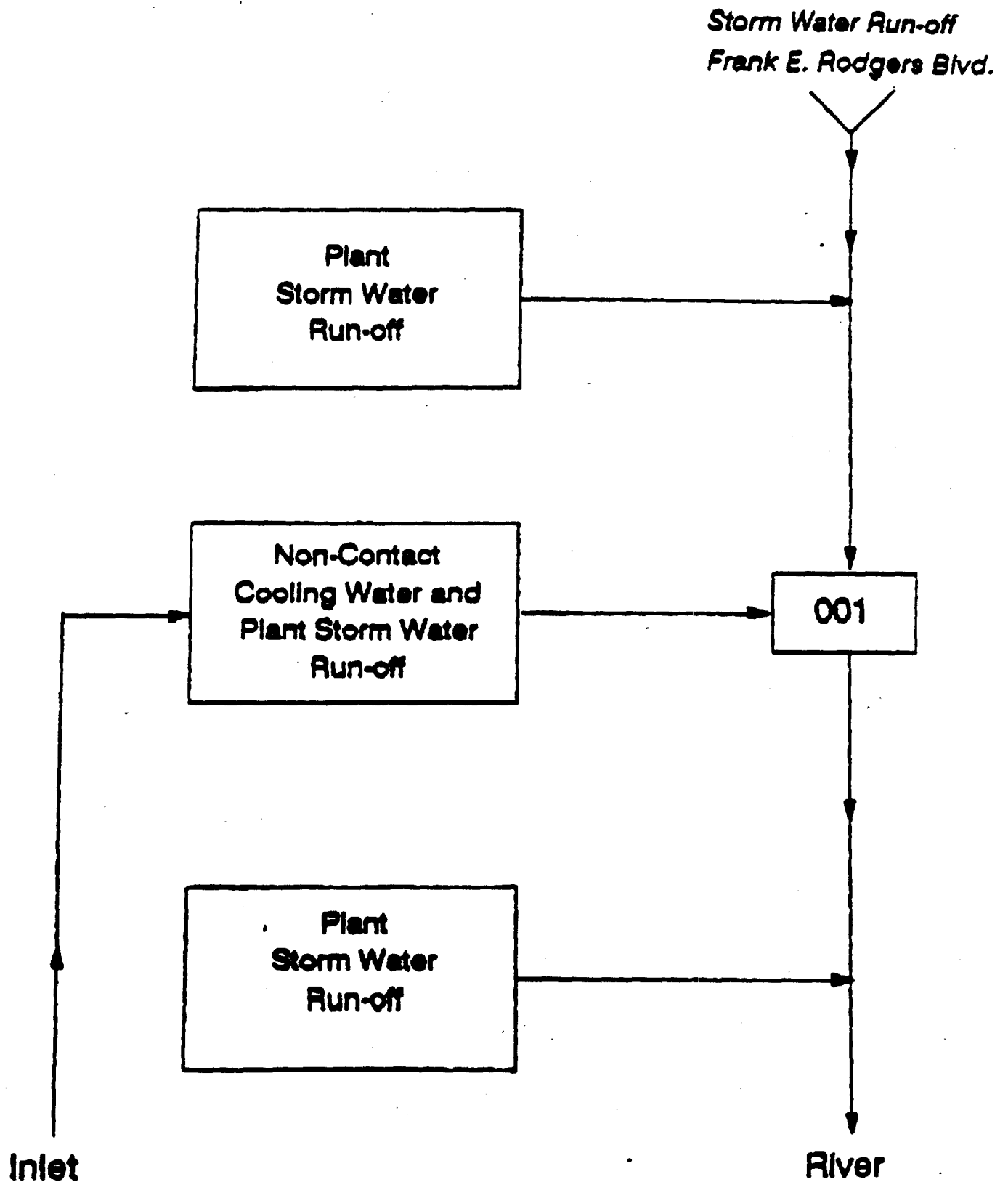
TABLE 3 EPA HAZARDOUS SUBSTANCES (CONTINUED)

CHECK APPROPRIATE BOX

NAME	A	B	C	D		A	B	C
ethanolamine				X	uranium			
ethion				X	vanadium			
ethylene diamine				X	vinyl acetate			
ethylene dibromide				X	xylene		X	
formaldehyde				X	xlenol			
furfural				X	zirconium			
guthion				X				
isoprene				X				

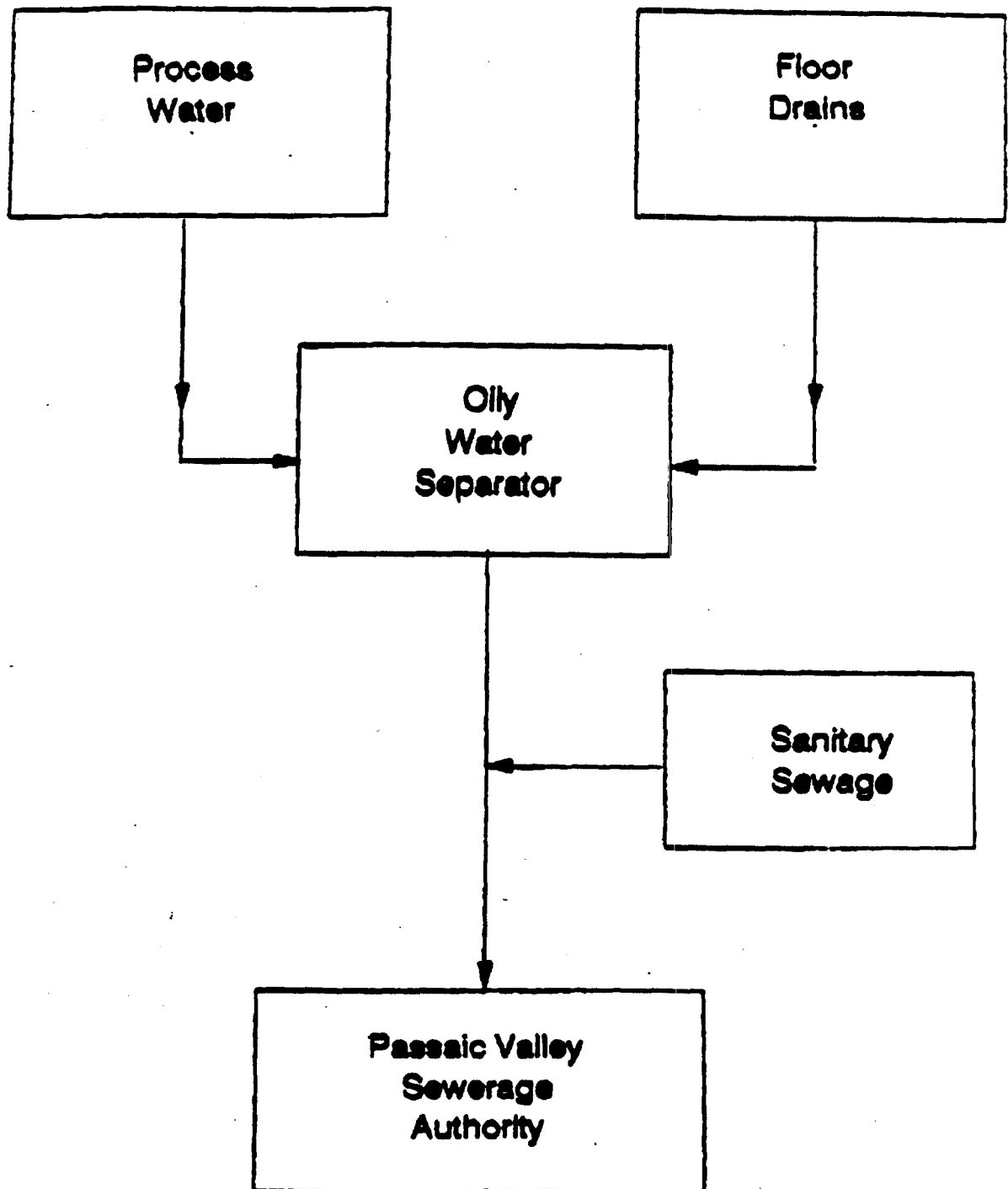
- A. KNOWN TO BE PRESENT
- B. SUSPECTED TO BE PRESENT
- C. KNOWN TO BE ABSENT
- D. SUSPECTED TO BE ABSENT

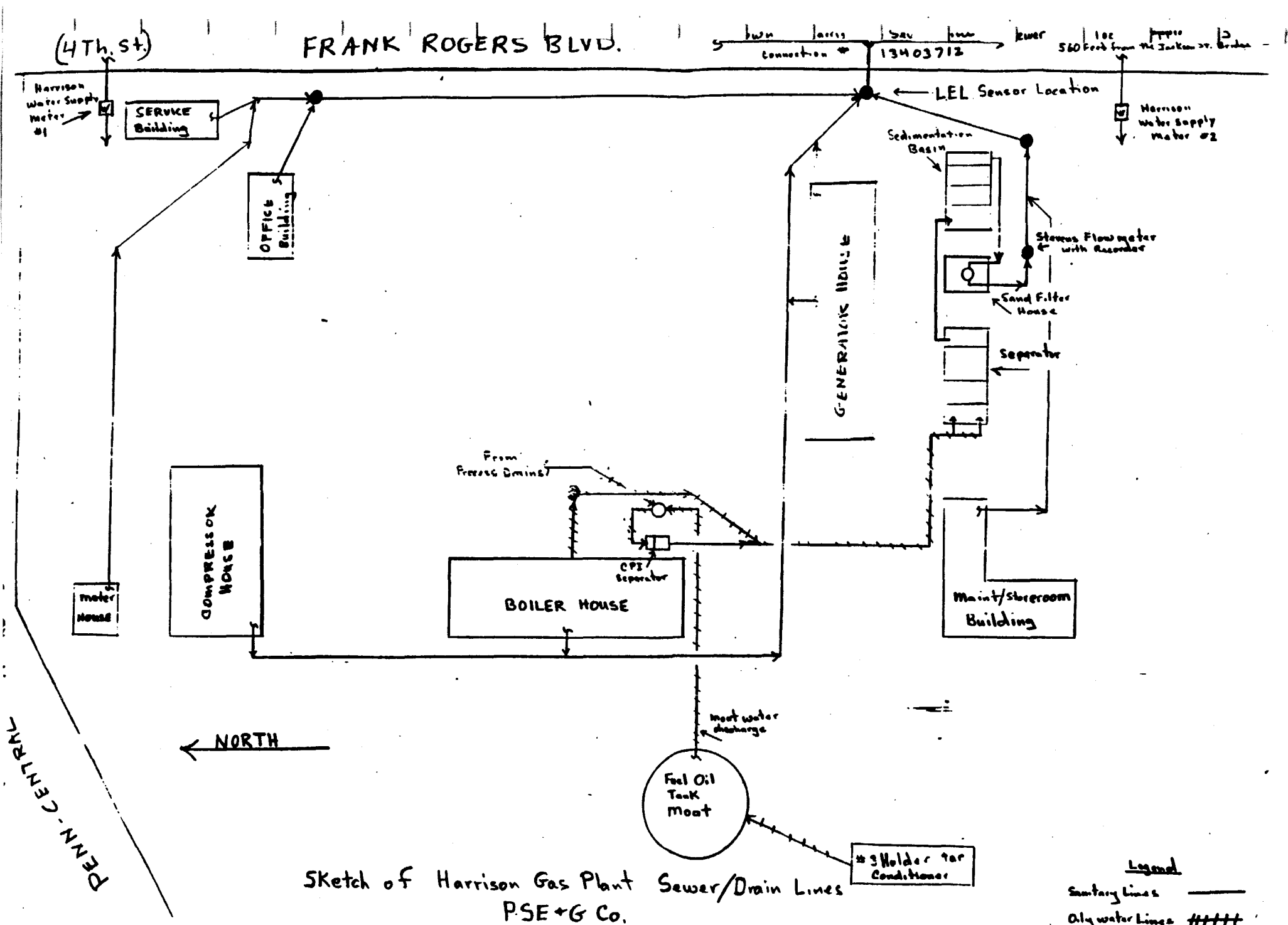
Diagram A
Harrison Gas Plant Discharges to Passaic River



850000103A

Diagram B
Harrison Gas Plant
Discharges to Passaic Valley Sewerage Authority





Legend
 Sanitary Lines ———
 Oily water Lines #####

THIS MAP CAN BE FOUND IN THE SITE FILE LOCATED AT: U.S. EPA SUPERFUND RECORDS
CENTER, 290 BROADWAY, 18TH FLOOR, NY, NY 10007

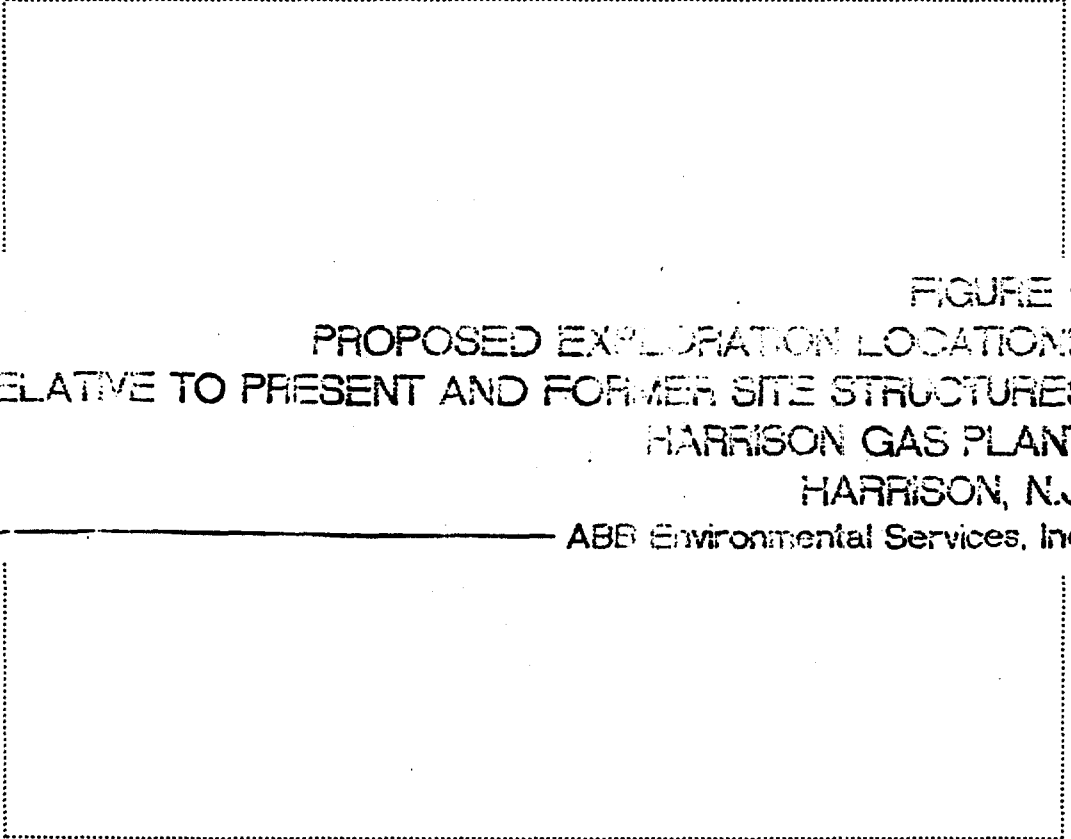


FIGURE 6
PROPOSED EXPLORATION LOCATIONS
RELATIVE TO PRESENT AND FORMER SITE STRUCTURES
HARRISON GAS PLANT
HARRISON, N.J.

ABB Environmental Services, Inc.

850000106